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THIS WEEK'S NEWS

THE SHORTAGE OF ARCHITECTS who can safely be entrusted with the repair of ancient churches has been drawn attention to in the report of the Church Assembly Commission on the Preservation of Churches. p. 871

NAMES OF ARCHITECTS and others connected with the building industry who received awards in the first Birthday Honours conferred by the Queen are given on p. 872

SOME METHODS of blast-resistant construction which will help to minimise the effects of atom bombs on buildings are described by a contributor on p. 873

THE TRIUMPH of the Modern Movement in invading the sphere of American domestic architecture is described on p. 876

A GROUP OF 14 "PEOPLE'S HOUSES" built recently by Canterbury Corporation at the request of the Ministry of Housing and Local Government are illustrated and their costings analysed on p. 882

HOUSES COMPLETED in Great Britain in April numbered 17,401 *compared with* 15,123 *in April,* 1951, *according to the latest Housing Progress Report.* p. 885

TECHNICAL EDUCATION was tending to become far too narrow in conception and appeared largely to be directed towards getting students up to a standard to pass certain technical examinations, said Mr. D. E. Woodbine Parish in an address to student teachers at Bolton recently. p. 895

THAT THERE WAS "no justification" for the new wage demand recently put forward by the Amalgamated Society of Woodworkers, which if met would add £60m. to the annual wages bill of the industry, was the view expressed by Mr. J. Ian Robertson, president of the N.F.B.T.E., at Bristol, on Wednesday. p. 896

LICENSING CONCESSIONS IN THE BALANCE?

MR. ECCLES, Minister of Works, must shortly announce the conditions, due to come into operation on July 1 next, governing private building for the next twelve months.

There have been grounds for hope of late that the Minister intended to raise to a very substantial level the "free limit" for maintenance and private building, and certainly the remarkable increase in the production of home building materials, particularly cement, bricks and fitments, has done nothing to discourage that hope. Brick production, for instance, has increased by 13 per cent. and cement by 10 per cent. over ....parable 1951 figures.

As against this, the supply of steel, certain non-ferrous metals and timber continues to cause anxiety. Apart from any interruption in imports that may be occasioned by the U.S.A. steel dispute, all these materials draw upon dollar exchange and the adverse trend of the balance of trade, added to the appeals to the building industry to economise in their use, made on two recent occasions by Mr. Macmillan, Minister of Housing and Local Government, must be taken as an indication that there may be difficulty in maintaining essential imports of these materials.

Steel and timber, vital to building, remain the keys which alone can open the door to a virtually unrestricted programme of construction; neither unfortunately is within the industry's control. While the need for economy in the use of steel and timber persists, it is difficult to see how Mr. Eccles will be able to follow what is thought to be his personal inclination—virtually to decontrol constructional work. Instead, the building industry may have to be content with more modest concessions, though any action taken by the Minister in fixing new limits which does not take into account the considerable rise in building costs since the present free limit of £100 annually was imposed will cause great disappointment.

The idea of a regional scheme of licensing has been mooted by which, for example, agricultural and seaside towns might be exempted from licensing control, leaving the industrial areas subject to the licensing machinery, but the Defence Regulations do not permit such discretionary treatment. The industry must expect the continuance of an overall scheme while hoping, in the interests of employment, that the free limit may be raised as high as economic considerations will allow.

WHERE THE RAINBOW ENDS

A RECENT news item is worth quoting in its entirety as a matter of some concern to housing architects, who are generally anxious to please but find public preferences a little puzzling. Under the heading "Four-colour bar" the report reads: "Sixteen of 22 council-house tenants at Becclesgate estate, Dereham, Norfolk, have protested against a council proposal to paint their front doors red, green, blue and ivory, to 'brighten up the town.' They complain: we shall look like a fairground and become a laughing stock."

We almost hear them add "three jeers for the red, ivory and blue, and boo to the rotten old aesthetes." Here is the indomitable British spirit which refuses to be regimented, even into individualism, by officious bureaucracy, probably egged on by some "long-haired artist type." Let us uphold the right of every free Briton to express his personality by being exactly like his neighbours—or at least those in the majority of 16 to 6. Did not Henry Ford concede that people should have any coloured car they liked so long as it was black?

The report does not say what colour the Becclesgate tenants prefer, but uniformity is evidently the order of the day there, if ridicule is to be avoided from the unspecified fairground-fanciers who, it is feared, will be drawn to Dereham (Pop. 5,641, early closing Wednesday) by this garish display. But are these the neo-Elizabethans we are promised, and is this the heralded dawn of the Age of the Uncommon Man? It all seems so much at variance with what we are repeatedly told by lay critics, who deplore the monotony and standardisation almost inevitable in the contemporary scene.

If the Becclesgate tenants had rebelled against what is rapidly becoming a design cliché, we would have been with them. Had the 16, more mathematically-minded than the rest, claimed that four colours into 22 houses won't go, but leave two over, a practical point emerges. Again, had they hoped that 22 *different* colours would be forthcoming to express their individual auras, and feel frustrated, we would sympathise.

But, stay! A fearful doubt creeps in. Can it be that the Council's Machiavellian design calls for *all* four colours on *each* door? The report as quoted is certainly a little ambiguous on this point. But it still seems a long step from parti-coloured doors to fairgrounds, and from there to laughing stocks. Are not the Becclesgate 16 seeing (to paraphrase the immortal *Cold Comfort Farm*) "something nasty on the woodwork" before it is there?

But our gentle leg-pulling is kindly in intent—it is at least

encouraging to find the tenants of sponsored housing interested in their surroundings. There is, however, a more serious aspect.

We have lately seen, in spite of gloomy prognostications, large crowds obviously enjoying themselves on the South Bank and at Battersea, in surroundings to which the skilful use of unashamedly gay colour has contributed not a little. They assured us they liked it as much as we did, but from the Becclesgate estate perhaps comes the answer to a B.B.C. discussion after the Festival, asking in effect whether the public would accept or reject its architectural style for the future. This broadcast at the time seemed ill-considered and over-simplified, the question being rather, will the public accept the same sort of approach by the same sort of designers, for example, to the housing problem ?—the Festival being rather one of display and exhibition mounting, as which it was an undoubted popular success.

We suspect that the difficulty at Becclesgate estate has something to do with preconceived ideas of what a house ought to look like, and " everything in its proper place." If so, it is a pity that our homes are not the proper place even for red, green, blue and ivory, in themselves harmless enough it seems, as is the Council's desire to " brighten up the town."

But that is a matter of taste. More factually, the intellectual is currently apt to conceive " popular art " as representing the preferences of watermen, gypsies and costermongers. If this were so, there would be little cause to worry, and we should find ourselves at home in such colourful company. But it seems more likely that the real popular preference is for the pretentious little black car wryly aping the " dollar grin " and for the dreary pin-striped simulacrum of Savile-row. The juke-box, the pin-table and the hand-painted tie at least show a beauty—vulgarity untrammelled by consideration of what is socially " acceptable."

The Becclesgate estate tenants are almost certainly very nice people, and more sensible than the brief Press report makes them seem. But if dignity is the only ground their protest stands on, we really couldn't say whether their action is in time to prevent the consequence they fear.

INSTITUTE OF BUILDERS

THE Council of the Institute of Builders has still failed to make any response to the questions we put to it in our leading article last February. No doubt it has its reasons. It has also chosen—if that be the word—to allow the highly critical letters which followed our questions to go by default, which seems a little strange. Can it be that the Institute has no reply to the criticisms of the heads of the Schools of Building, or of architects and builders who find it failing in the purpose which the Institute of Builders should fulfil ? Is the Council content that this should be the construction which the builder, on whom the Institute depends for the bulk of its revenue, puts on its monumental silence ? That way means the end of the Institute—or the creation of another Institute nearer to the heart's desire of the organised builder.

This leads to a very obvious suggestion. The annual meeting of the Institute, due to take place this month, has been postponed ; the council has not yet decided when it shall take place. Is it not time that an entirely new Council be elected, and the present office-bearers put themselves in the hands of the new Council ? The Institute has recently appointed a new Secretary who comes, we understand, with a record of good work in other fields behind him. Is not the next necessity a strong President, whose name carries weight in the building industry, who can take the Institute in hand and make it the force in the land which it ought to be and which the building industry would like it to be ?

Under a new regime, the Institute of Builders would take its place as the leading educational organisation in the building industry, but this can only come about quickly if every member of the Institute having the interests of building education at heart will take the opportunity afforded by the annual meeting (when it is fixed) of making his voice heard—and incidentally finding out why the volume of criticism from an important body of correspondents has been allowed to go unanswered.

THE PILGRIM TRUST

THE Pilgrim Trust continues to do admirable work in the cultural field, particularly for the preservation of ancient buildings. Although, as a result of the decision of the Trustees to suspend aid for the repair of English parish churches, total expenditure in 1951 on ecclesiastical work (according to the Twenty-first Annual Report, just issued) dropped from £62,000 to £21,000, expenditure on the preservation of secular buildings increased from £20,000 to £71,000. The ecclesiastical buildings to which grants were made include York Minster, Worcester Cathedral, Manchester Cathedral and Brechin Cathedral, Angus. Among secular buildings the most important grants were made for repairs at two great public schools, Winchester and Eton, which received between them the substantial sum of £36,000. To avoid raising false hopes elsewhere the Report emphasises that it is not the policy of the Trustees to help schools for educational purposes or for the modernisation of out-of-date buildings.

Large grants were made to the English and Scottish National Trusts to enable them to acquire or improve three properties of unusual interest, Compton Castle, Devon, a mediaeval fortified castle, once the home of Sir Humphrey Gilbert, the Elizabethan sailor, who formally annexed Newfoundland, and still the residence of the Gilbert family ; the great fourteenth-century tithe barn at Bredon Manor, Worcestershire, one of the largest and finest of its type ; and Culzean Castle, on the coast of Ayrshire, which was largely rebuilt in the latter part of the eighteenth century to the designs of Robert Adam. The castle contains the National Guest House for Scotland, which has twice afforded rest and relaxation to General Eisenhower. Other secular buildings and monuments which received grants include the Old Palace at Oxford ; Coupar House, Blandford ; Dacre Hall, Lanercost Priory, Cumberland ; the College of St. Mark, Audley End ; and the market cross in the beautiful old Wiltshire village of Castle Combe. Since its foundation the Trust has authorised grants to a total value of £2,111,055.

A total of £18,000 has now been voted towards the rebuilding of Canterbury Cathedral Library and the repair of its contents, while Magdalen College, Cambridge, has received £3,000 for the repair of books and bookcases in the Pepysian Library. The bookcases (or presses, as Pepys called them) came from Pepys's library at 14, York-buildings, W.C., and are excellent examples of seventeenth-century design and carving, now in need of small repairs and treatment against woodworm. Among the grants for art and learning is one of £500 to the London Topographical Society towards the publication of a work of topographical history by Mr. B. H. Johnson, the author of " Berkeley Square to Bond Street."

Most of the buildings, etc., referred to are illustrated in the report by means of beautiful collotype reproductions of photographs, the Bredon tithe barn being from a splendid pen-and-ink drawing by Mr. Dennis Flanders. There is a particularly fine illustration of the Prior's Kitchen at Durham Cathedral (an octagonal interior with superb vaulting), before its adaptation as a muniment room, towards the cost of which, and other works, the Trust has made a total grant of £16,600. The Trust's investment income for 1951, at £131,890, showed an increase of some 6 per cent. on the figure for 1950, and represents almost the highest income received since the foundation of the Trust in 1930 by the late Edward S. Harkness. The Report is issued from Millbank House, S.W.1.

NOTES & NEWS

REPAIR OF CHURCHES

IF the recommendations of the Church Assembly Commission on the Preservation of Churches are accepted (they were recorded in a summary of the recently issued Report on page 852 of our last issue), they will mean a great deal of work for which neither the architectural profession nor the building industry is fully prepared.

As the Report points out, there is a shortage of architects who can be safely entrusted with the repair of ancient parish churches, which is due not only to the lack of this type of work during the period of enforced neglect but to the falling off in the study of mediaeval architecture among students and the revolutionary change in materials and methods of construction, which has resulted in practices unsuitable for the treatment of ancient buildings. There is thought to be a danger too, that architects who are unfamiliar with old materials and construction may tend to over-restore and rely too much on new work instead of conservative repair. It is urged, therefore, that every encouragement should be given to students who are willing to undertake courses in this subject, and especially to become pupils of those architects who have specialised in church repair. With an estimated ten years of continuous work before them the recruits should be readily forthcoming. Courses of training for architects in the repair of ancient buildings are already available at the Bartlett School of Architecture and elsewhere.

What of the craftsmen? There is ground for particular anxiety over the supply of stonemasons, and the Report states that unless there is a bigger inflow the craft will die out. The problem is receiving special attention through a consultative committee of the stone industry, set up in 1950 under a Ministry of Works chairman, to advise on matters relating to the processing and use of block stone for masonry and monuments. It is suggested in the Report that the Church itself can help by making the cathedral workshops centres of training.

Where there is space available these could be enlarged and the staff increased, not only for instruction in masonry but in the other crafts, such as lead-casting, metalwork, joinery, wood-carving, etc. Sometimes the whole staff would be needed on the cathedral, but in slack periods it could do work on neighbouring parish churches. Although they are not specifically mentioned in this Report, the schools of building and the firms who specialise in the repair of churches could do much to help in the training of craftsmen.

IPSWICH PROTOTYPE HOUSES

THE Eastern Federation of Building Trades Employers has been informed that the London County Council will shortly be inviting tenders for houses whose design is based on that of the Federation's prototype three-bedroom semi-detached houses erected last year at Elmcroft-road, Ipswich. The Federation points out that despite its desire to make its contribution to the problem of bringing down housing costs, other housing authorities are still prevented from making use of these designs if they wish since the living space is 17 sq. ft. short of the Ministry's minimum of 320 sq. ft.

ARTS AND CRAFTS EXHIBITION

ON JUNE 10, the Earl Haig presented school diplomas to 37 successful students who had completed a three-year full-time course at the London County Council's Central School of Arts and Crafts. Of these 11 gained distinction in their various subjects.

In her introductory address, Mrs. Helen Bentwich, chairman of the Governors of the School, also pointed out that in the 1951 Royal Society of Arts Industrial Art Bursaries competition, three bursaries of £150 each, one of £100, one of £50 and one of £25 were awarded to Central School students.

The reason why the school has had these successes can be seen in the excellent exhibition of students' work which opened on June 11 at the school premises in Southampton-row. In the large hall on the ground floor there is a general exhibition showing some fine examples of the various sides of the training offered by the school, while in the Common Room there is a special exhibition on theatre and costume with live models. On other floors there are studio exhibitions on industrial design, furniture and textiles. Throughout the exhibits are of a very high standard and we can but reiterate Lord Haig when he expressed the hope that the students would have many years of achievement and prosperity in front of them.

HOSPITAL PLANNING

THE NATIONAL COUNCIL of Nurses of Great Britain and Northern Ireland, representing over 51,000 trained nurses, has been considering for some time the question of hospital planning, and has collected information from this country and from abroad. Nurses have a keen interest in this subject and a special contribution to make, and an open conference is to be held on September 2 next at the R.I.B.A. headquarters, 66, Portland-place, W.1. The speakers will be drawn from the medical and nursing profession, as well as architects.

COMING EVENTS

MONDAY, JUNE 16

L.C.C. BRIXTON SCHOOL OF BUILDING.—Opening of display of students' work. School of Building (New Annexe), 55, Barrington-road, S.W.9. Daily 10 a.m.-12.30 p.m. and 1.30 p.m.-4.30 p.m. until June 20.

TUESDAY, JUNE 17

R.I.B.A.—Council election results and lecture by Mr. J. Isaacs on "The Gothick Taste." 66, Portland-place, W.1. 6 p.m.

R.I.C.S.—Third triennial conference of quantity surveyors. Institution of Mechanical Engineers, Storey's Gate, S.W.1. 11 a.m.

N.F.B.T.O.—Opening of 35th annual conference London Hotel, Teignmouth, Devon. 10 a.m. Continuing until June 20.

WEDNESDAY, JUNE 18

ROYAL SANITARY INSTITUTE.—"The Utilisation of Town Refuse," by Mr. H. Gurney, M.B.E., and "Care of the Aged: The Sanitary Inspector's Contribution," by Mr. E. T. Jenkins, M.S.I.A. Central Library Hall, High-road, Tottenham. 11.30 a.m.

FRIDAY, JUNE 20

L.M.B.A. GOLFING SOCIETY.—Match between L.M.B.A. and Metropolitan Borough Engineers. Hendon Golf Course.

SATURDAY, JUNE 21

INSTITUTE OF QUANTITY SURVEYORS.—A.G.M., Caxton Hall, Caxton-street, S.W.1. 2.30 p.m.

SOUTHERN REGIONAL COUNCIL FOR FURTHER EDUCATION.—Trowel Trades Conference. Portsmouth Technical College. 10.30 a.m.

SUNDAY, JUNE 22

NATIONAL FEDERATION OF BUILDING TRADES EMPLOYERS.—Cricket match against Vitruvians XI. Architectural Association ground, Elstree, Herts. 11.30 a.m.

HOLIDAY ABROAD

MR. K. AANSTOOT, a Dutch architect, informs us that he would like to exchange homes for a holiday in July-August with a British architect living in the London area. Mr. Aanstoot's address is 129, Prins Henriklaan, Overveen, Holland.

HISTORICAL MONUMENTS

THE QUEEN has approved that Mr. W. G. Allen, F.S.A., F.R.I.B.A., be appointed a member of the Royal Commission on Historical Monuments (England) in succession to the late Duke of Devonshire.

AUSTRALIAN APPOINTMENT

THE Government of Western Australia is inviting applications from town planners "capable of preparing a comprehensive plan for Perth and the Metropolitan area and their future development." Applications must be sent, by July 1, to the Agent-General for Western Australia, Savoy House, Strand, W.C.2, from whom further particulars may be obtained.

PROFESSIONAL ANNOUNCEMENTS

By mutual agreement MR. C. GURNEY BURGESS, L.R.I.B.A., is leaving the Peter Dunham Group and will resume practice on his own account from Market Hill Chambers, George-street, Luton (Telephone Luton 5685). MR. PETER DUNHAM, F.R.I.B.A., MR. MACFARLANE WIDDUP, A.R.I.B.A., and MR. MICHAEL HARRISON, A.R.I.B.A., will continue the practice from 42/44, Hastings-street, Luton, but the title of the firm will be changed to MESSRS. PETER DUNHAM, WIDDUP AND HARRISON.

MR. J. L. WHEELER, M.Inst.C.E., announces that he has taken his senior assistant, MR. ARTHUR H. JUPP, D.F.C., A.M.I.Struct.E., into partnership. The business of consultant engineers will be carried on under the title of J. L. WHEELER and JUPP at Empire House, St. Martin's-le-Grand, E.C.1.

MESSRS. E. SPRIGGS AND PARTNERS, chartered quantity surveyors, of Brompton-road, S.W.3., announce that they have, from today, taken over larger premises at 2, South Audley-street, W.1. Tel.: Grosvenor 5508-9.

THE QUEEN'S BIRTHDAY HONOURS

First List of New Reign

FOLLOWING is our list of recipients of the first Birthday Honours conferred by the Queen:

KNIGHT BACHELOR

R. E. M. WHEELER, C.I.E., M.C., Secretary of the British Academy, Professor of the Archaeology of the Roman Provinces, University of London.

K.C.M.G.

SIR CECIL McALPINE WEIR, K.B.E., M.C. For services as a member of the Dollar Exports Council.

C.M.G.

L. F. IRWIN, F.R.I.B.A. For services to Architectural Education in State of Victoria.

C.B.E.

T. J. DRAKELEY, Principal, Northern Polytechnic, London.

L. C. B. PENWILL, Director and Secretary, Electrical Contractors' Association.

W. SAVAGE, Works Director and Chief Engineer, Ruston Bucyrus, Ltd.

J. N. SUMMERSON, A.R.I.B.A., Curator of Sir John Soane's Museum.

O.B.E.

H. G. A. BAKER, lately Secretary, Commons, Open Spaces and Footpaths Preservation Society.

H. BLACKMAN, Director, National Federation of Plumbers and Domestic Engineers (Employers).

G. P. BRIGHTWELL, Deputy Building Construction Adviser, Min. of Supply.

H. CARR, F.R.I.B.A., F.R.I.C.S., County Architect and Planning Officer, Montgomery.

G. W. CHANDLER, M.M., Deputy City Engineer and Surveyor, Birmingham.

C. W. CHILDS, A.R.I.B.A., Senior Architect, Min. of Education.

HARVEY G. FROST, Chairman, Bury St. Edmunds and Dist. Employment Cttee.

A. B. MANN, Assistant Chief Engineer, Min. of Works.

T. E. NORTH, F.R.I.B.A., Architect and Planning Officer, West Ham C.B.

C. H. H. SMITH, Principal Regional Officer, Bristol, Min. of Housing and L.G.

H. G. WARREN, Planning Inspector, Min. of Housing and L.G. (lately Senior Inspector).

L. H. WILSON, A.R.I.B.A., A.M.T.P.I., City Architect and Planning Officer, Canterbury.

F. R. YERBURY, Hon.A.R.I.B.A., Director, the Building Centre, London.

M.B.E.

J. ALEXANDER. For services to the Glasgow Committee of the Scottish Veterans Garden City Association.

MRS. M. CHILCOTT, Deputy Building Licensing Officer, Birmingham Reg., M.O.W.

L. H. CLARKE, A.R.I.B.A., M.T.P.I., Borough Engineer and Architect, Harrogate.

V. P. GLANVILLE, Branch Manager, Cumberland Area, N.E. Housing Association.

G. L. GRANT, Surveyor, Min. of Works.

L. C. GRAY, Divisional Secretary and Organiser, A.U.B.T.W.

P. HASLAM, J.P., Chairman, N.W. Federation of Building Trades Operatives.

H. HOW, F.R.I.C.S. For services to the Royal Institution of Chartered Surveyors.

A. MOODY, Engineer and Surveyor, Milford Haven U.D.C.

J. A. PRESS, Manager, Bakelite, Ltd., Aycliffe.

T. B. THOMSON, Sales Manager, Associated Clay Industries, Ltd., Paisley.

A. N. TROWBRIDGE, Sanitary Inspector and Surveyor, Market Bosworth R.D.C.

C. F. WARD, F.R.I.B.A., Architect, Welsh Office, Min. of Housing and L.G.

J. A. WHITTAKER, Member of Executive Council, Amalgamated Society of Woodcutting Machinists.

B.E.M.

E. W. BONES, Clerk of Works, Grade II, R.A.F., Biggin Hill (Sutton).

MISS E. BRADDOCK, Craftswoman, Grade I, Min. of Works (East Molesey).

C. JAMES, Carpentry Instructor, Kingswood Approved School, Bath.

G. W. LLOYD. Carpenter, m.v. "Auricula," Anglo-Saxon Petroleum Co., Ltd.

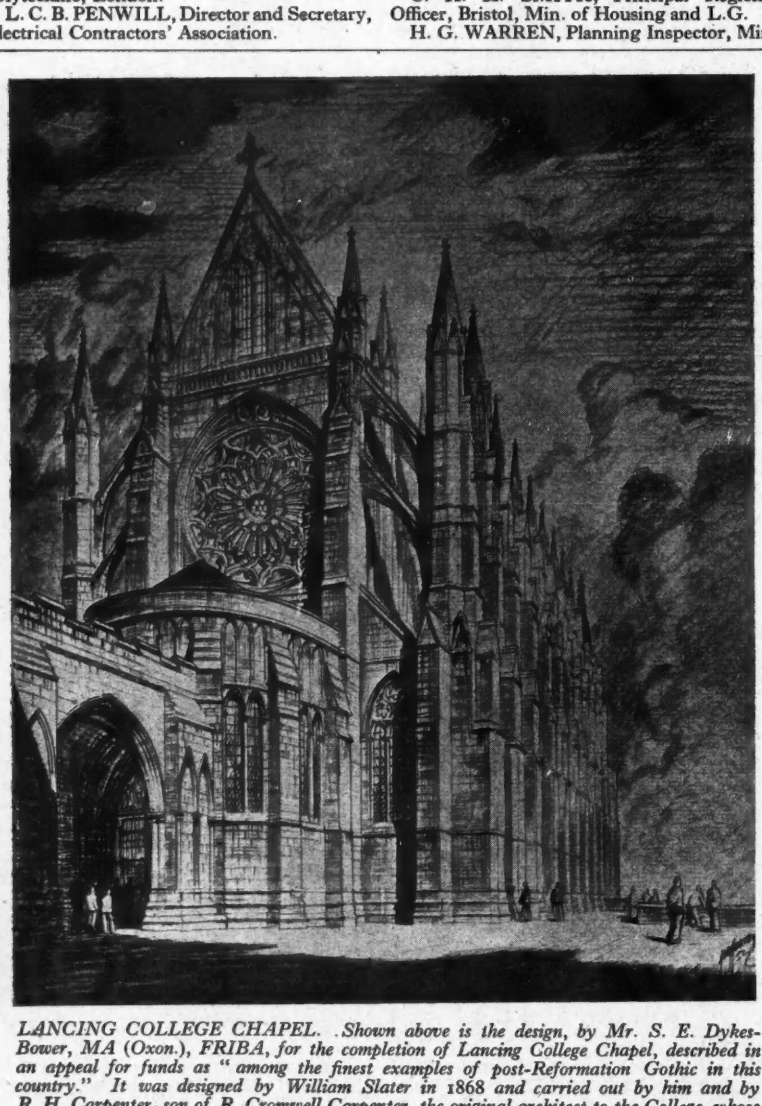
P. W. J. MATTHEWS, Building Foreman, Hayle Power Station, S.W. Division, B.E.A.

W. C. NEVILLE, Charge-hand Carpenter, Southern Electricity Board (Swindon).

F. NEWELL, Foreman, Ancient Monuments, Min. of Works. (Becontree).

F. T. STOVELL, Foreman, Scaffolding (Great Britain), Ltd., Mitcham, Surrey.

W. SUGG, Clerk of Works, Abbey and Margam Works, Steel Company of Wales.



LANCING COLLEGE CHAPEL. Shown above is the design, by Mr. S. E. Dykes-Bower, MA (Oxon.), FRIBA, for the completion of Lancing College Chapel, described in an appeal for funds as "among the finest examples of post-Reformation Gothic in this country." It was designed by William Slater in 1868 and carried out by him and by R. H. Carpenter, son of R. Cromwell Carpenter, the original architect to the College, whose assistant Slater had been. The Chapel was consecrated in 1911. Mr. Dykes-Bower's design provides for a slight westward extension, a new west wall with a large rose window, and an apsidal narthex. The cost of the first part (rendered necessary through deterioration of the present western end) is estimated at £50,000.

FROM "THE BUILDER" OF 1852

Saturday, June 12, 1852

NEW VESTRY HALL, KENSINGTON.—The parishioners of Kensington have recently built a new vestry-hall, the inconvenience of the room adjoining the parish church having been long felt. . . . Mr. Broadbridge was the architect, and Mr. Thomas Cordby the builder. It is constructed of red bricks, with stone dressings, and stands in the High-street, on the west side of the National Schools.

MR. W. HOFFMAN WOOD'S WILL

IN THE WILL of Mr. W. Hoffman Wood the "Leeds Medal" is to be awarded to the artist, born in Yorkshire within 60 miles of Leeds town hall, completing the best painting, sculptural or architectural work during 1952. Consideration is now being given by the trustees for the "Leeds Medal" to be awarded for 1951. By the terms of the will, architectural scholarships are being awarded to cover architectural training of Yorkshire students of either sex and applications may be sent to W. H. Clarke and Co., solicitors, 12, South-parade, Leeds, 1, by July 31 next.

ATOM BOMBS AND THE ARCHITECT

Some Methods of Blast-Resistant Construction

By JOSEPH B. SINGER, B.Sc.(Arch), ARIBA

IT would be tantamount to defeatism to accept the view that defence measures against atom bombs are pointless because of the devastating force of the bomb. Tests and research carried out in the U.S.A. have revealed the effects of atomic blast on buildings, and recommendations have been put forward suggesting various types of blast-resistant constructions.

In normal conditions, an architect is expected to design a building which fulfills its purpose and function. The provision of shelter against atom bombs has become another requirement for a building, though a requirement which, it is hoped, will never be put to the test.

Defence against atom bombs involves problems such as the effect of the bomb on different types of buildings, the degree of protection which can be expected from existing buildings and the erection of suitable shelters.

Although a dispersion of buildings is the best defence measure in A-bomb warfare, it cannot always be achieved, particularly in densely populated parts of the country. Design of blast-resistant buildings is the only alternative to de-urbanisation of critical areas.

Post-war investigations at Hiroshima and Nagasaki demonstrated the ability of reinforced concrete and heavy steel structures to withstand blast, but their interiors were completely shattered and gutted due to fire and blast penetration through the wall openings. It was evident that though these buildings survived as structures they failed in their purpose as shelters.

FOUR MAIN EFFECTS

The study of effects on buildings at Hiroshima and Nagasaki showed that the bursts which occured at between 1,800 and 2,000 feet above the ground caused (a) a blast which travelled with the velocity of sound ; (b) a powerful wind force resulting from the expansion of heated air near the point of detonation ; (c) heat which struck all exposed objects ; and (d) gamma rays.

The burst of the bomb causes a sudden rise of air pressure, which is followed by a decrease below the atmospheric pressure. These two phases have different effects on buildings ; whilst in the first phase the structure is mainly affected, in the second one, plaster, stone and brick linings are stripped off by the force of air suction ; in the latter phase considerable injuries to personnel may be caused by flying debris. The force of the blast is equivalent to the impact of a dynamic load of an extremely short duration. The duration varies, depending on the type of bomb, and it is relatively longer in the case of atomic bombs than with high explosive bombs.

The heat of the explosion can set fire to inflammable materials, but the spread of fires through disrupted gas pipes and electrical short circuits is far more dangerous. Nuclear radiations do not affect buildings, but they can be deadly to persons. Massive concrete walls can give protection to personnel from these radio-active rays, and the effectiveness of the shelter depends on the thickness of the wall in relation to its distance from the point of explosion.

It is difficult to design a blast-resistant building on the basis of a single equivalent static load, because every structure consists of different members, varying in lengths, means of fixing and support, and consequently their dissimiliar reactions, when subjected to dynamic loads, complicate design calculations. Moreover, the conditions of exposure and failure vary, since the damage from high explosive bombs is due to a variation in pressure, whereas in the case of atom bombs the greatest damage is caused at the peak of their maximum pressure.

ADVANTAGES OF REINFORCED CONCRETE

The blast pressure usually tends to crush the building, and although the wave of blast travels at the speed of sound, it wil take some time before the pressure arrives at the rear of the building to counteract the pressure to which the front of the structure is exposed. A suitably designed building frame has to resist the initial impact of these blast forces. A reinforced concrete frame with infilling panels of the same material suitably anchored gives a much greater amount of safety than load-bearing walls. Continuity in structure is most desirable, as a large number of bracings and strong connections between members add stability to the building.

During the last war several examples of structures were noted as still standing after a main member, such as a column, girder or beam, had been destroyed ; on the other hand, some collapsed buildings could, it was thought, have withstood the explosion if they had been designed with a slightly increased strength. The use of stresses above the yield point value for steel or reinforced concrete structures could make possible the removal of a main member without the failure of other members. In designing these members it had been suggested to extend the allowable stresses into the plastic range.

Blast-resistant buildings should also be designed to withstand the effects of high explosive bombs. Serious damage can be done to a reinforced concrete structure when a high explosive bomb penetrates the roof and detonates inside the building. The explosion may cause a rupture at column splices, but this failure can be partly overcome by joining the reinforcing steel rods of the column, and butt- or lap-welding them at the splices and at the roof level. The burst of the bomb inside the building will produce " reversed " loading conditions on the underside of the concrete roof and floor slabs above the point of explosion, i.e. tensile and compressive stresses will take place in the upper and lower parts of the beams, respectively. Some " negative " reinforcement at the top of the beam should, therefore, be introduced, and vertical stirrups, in preference to bent bars, provided for shear resistance.

It was noted in steel-framed buildings that open trusses were less liable to damage than solid web girders, because a smaller surface area had been exposed to blast. The infilling panels of brick and stone crumbled more readily than solid and homogeneous panels. Furthermore, loose roofing materials, such as tiles and slates, were more dangerous as potential missiles, than flat concrete roofs. Of the sheet roofing materials, such as corrugated iron and asbestos, the former transmitted high loads prior to failing, while the latter shattered, without producing heavy debris, before subjecting the frame to heavy stresses. In this respect asbestos roofing and cladding is to be preferred on the account of safety.

"RIGID BOX" STRUCTURES

" Rigid box " structural principles were suggested and employed for earthquake-proof construction some time ago. Under earthquake conditions the stability of such structures depends on the built-up horizontals, uprights and bracing members which form the floor, walls and roof. All these components are completely integrated with each other, and the impact of a considerable shock will only move the whole structure as one unit laterally. Normal buildings are to some extent designed as " rigid box " structures, but they are not sufficiently braced and integrated ; in particular, load-bearing brick and stone walls vibrate under the shock, causing the roof to fall in, followed by a collapse of the walls.

Since blast is transmitted through windows, their omission would appear to render a building less vulnerable. The underlying principle in the elimination of wall apertures is the increased stability of the wall. The wall thus becomes more capable of resisting horizontal thrusts, and although the effective area subjected to pressure is made greater, the mass and dynamic resistance are increased to a higher degree. It can therefore be concluded that, from a structural point of view, a solid reinforced concrete structure with a heavy roof will best withstand the effect of atomic blast.

In considering further the stability of the structure, it is clear that since the main forces act in the horizontal plane, the framework has to be designed accordingly and the external walls suitably strengthened to obviate the shearing action of the blast. The edging beams, the floors and the perimeter stanchions will help to transmit the impact load to the internal frame and side walls. Although it will be necessary to make the external walls and roof construction more substantial, the framework and the floors can be designed only a little above their normal live load requirements.

This type of structure is feasible and practical when artificial lighting and air-conditioning are installed, but aesthetic and psychological considerations of a windowless wall often call for some modification of the scheme. A compromise can be reached by designing the central block or one wing, without windows, and concentrating all essential services there. This part of the building

can be designed in conjunction with lifts and compartments which do not require natural lighting in any case. Alternatively, the ground floor, or several bottom storeys, can be built in this manner. The latter arrangement has the advantage of allowing people from upper storeys, as well as those from the street, to take shelter in the blast-resistant bottom part of the building; the disadvantage lies in the fact that it has to be of a much stronger construction than the previously described type in order to take the additional loading of the upper storeys and the increased area which will resist the force of blast. The most architecturally acceptable solution of blast-resistant structures is the provision of a strengthened core which is incorporated into the design of normally fenestrated buildings. Even in this case, the outside walls should be of brick or reinforced concrete construction, in preference to curtain walls, which are liable to cause more damage. Special blast-resistant doors and baffle walls have to be built to prevent debris from entering the strong-cored portion of the building.

CENTRAL CORE SHELTERS

The recommendations for centrally cored shelters in multi-storey buildings include the design of blast-resistant concrete walls 8 in. thick, reinforced with ¾ in. dia. steel rods at 6 in. centres, which have to take the lateral load of 150 lb./sq. ft. The wall has to be tied to the supporting members, and the floor stiffened with ribs running perpendicular to the wall to prevent failure of the floor by buckling. Walls, which intersect the main wall and run at right angles to the external walls, act as shear resistant panels and should be suitably distributed; in positions where expansion joints occur, the walls should be built on both sides of the joint and connected to the floor and ceiling. At least two openings must be provided on the opposite sides of the shelter to allow for alternative means of exit and to equalise the pressure.

Experimental shelters were built by the U.S. Navy for Eniwitok Atoll tests in 1951.

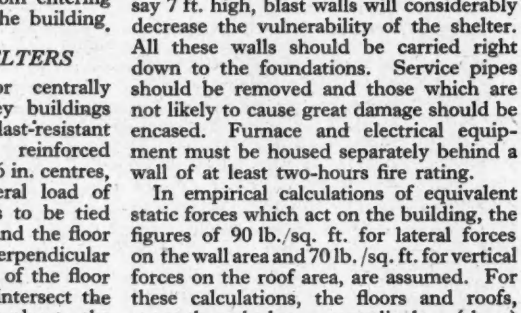
They consisted of thin shell-ribbed panels, which were bolted together to form a dome-shaped structure. The entrance was flanked by two fin-shaped walls, and the shelter covered with 2 ft. of earth. Another type of shelter was a ribbed shell concrete vault, built up from precast panels and bolted together, as shown on the diagram. Both shelters proved capable of giving the necessary protection at a distance of half a mile from the point of explosion.

EXISTING BUILDINGS

In built-up areas it is possible to carry out a conversion of some part of existing buildings. Although in the case of framed buildings, any suitable area can be utilised with certain modifications for shelters, buildings of non-framed construction are limited to the conversion of basements for the above purposes. The walls separating the shelter from the outside must be of substantial and massive construction, and be thickened if necessary. The structural compactness of the shelter and the close spacing of columns and beams are also of great importance. Doors and entrances should not be in a direct line with the outside, and there should be at least one interior staircase which is not adjacent to the external wall. Further precautions include the removal of heavy point loads on the floor directly above the shelter, avoidance of suspended ceilings and large service pipes, and the clearing of heavy objects, glass and large exposed lighting fittings from the shelter area.

These conversions of suitable compartments will require reinforced concrete blast walls, stiffened by intersecting and adequately spaced walls or columns which will provide a vertical bracing; even low, say 7 ft. high, blast walls will considerably decrease the vulnerability of the shelter. All these walls should be carried right down to the foundations. Service pipes should be removed and those which are not likely to cause great damage should be encased. Furnace and electrical equipment must be housed separately behind a wall of at least two-hours fire rating.

In empirical calculations of equivalent static forces which act on the building, the figures of 90 lb./sq. ft. for lateral forces on the wall area and 70 lb./sq. ft. for vertical forces on the roof area, are assumed. For these calculations, the floors and roofs, strengthened by perpendicular (shear) walls, are considered as deep beams which take the load from outside walls and transmit it to the foundations. Structures designed on the basis of these figures are estimated to survive at a distance of over half a mile from the point of detonation of a Nagasaki type of bomb.



An experimental atom bomb shelter of the ribbed-shell concrete vault type which gave adequate protection at a distance of half a mile from the point of explosion in the U.S. Navy's Eniwitok Atoll tests in 1951. It was built up from precast panels, and bolted together as shown in the section.

CORRESPONDENCE

COVENTRY CATHEDRAL

To the Editor of *The Builder*

SIR,—Grateful as I am to your correspondents "Forward" and "X" for their untiring efforts for my conversion, and much as I appreciate their point of view (I certainly will get a copy of "The New Coventry Cathedral"), I remain, with the support, I am sure, of a large body of professional and lay opinion, an unrepentant, nay, rebellious, traditionalist, since I fail completely to understand how anyone having seen the Saxon tower at Earl's Barton or that of Barton-on-Humber can still consider the Gothic arch an innovation; or that Renaissance is other than the Concise Oxford Dictionary definition, namely, a revival. It is high time that a thesis were prepared on "Tradition in Architecture" which would demolish once for all the myth of ancient and the validity of modern architectural innovation.

When the apologists for the design can state simultaneously that (a) "Gothic is not characteristic of our time and has exhausted its possibilities," and (b) "The design is full of the Gothic spirit," further comment may seem superfluous, but nevertheless I beg leave to ask if Guildford Cathedral is, or is not, Gothic in spirit and modern in conception and construction?

Mr. Basil Spence has undoubtedly produced "what was wanted," but it seems that even the assessors acknowledge that the "conception is unusual." Why should a cathedral, of all places, be unusual? One wonders if examiners apportion a large percentage of marks for the quality of being unusual. Thus does our language grow when a word implying faint praise becomes the synonym for excellence.

W. H. HOSKEN.

5, Buff-avenue, Banstead.

S.M.M. REVISION

To the Editor of *The Builder*

SIR,—As an ordinary, busy quantity surveyor, may I express myself with regard to the above?

There has been a great deal of correspondence on this subject in recent and not so recent issues of your newspaper, and rather than have this drag on indefinitely without getting anywhere, can it not be summed up by saying that all practising quantity and building surveyors appreciate that there are many, many inconsistencies contained in the current edition of the Standard Method of Measurement and that it is perfectly possible for them to be removed?

So surely the only thing remaining to be said is that all surveyors with any comments, criticisms, etc., to make should see that they are sent to the Royal Institution of Chartered Surveyors before October 31 next, in order that the Standing Joint Committee can get to work again without delay? This is not the time nor the matter on which conscientious surveyors can afford to be apathetic.

One letter on this subject in your issue of June 6 seemed to ridicule the idea of

correcting the English prose of the S.M.M. In my opinion, it is just as easy to write good English as bad English, and as the S.M.M. does represent the standard of measuring in this country, surely as a document its English should be perfect?

As an afterthought, it would be pleasing to see the many inconsistencies in spelling of words used within the building industry (e.g., stanchion, stancheon, etc.) straightened out in some way.

CYRIL A. GOODWIN, [A.R.I.C.S.]
59, Brantwood-road, N.17.

To the Editor of *The Builder*

SIR,—Mr. Vinycomb now demonstrates very clearly his belief in the theory that not only should bills of quantities not be read but that correspondence should not be read either, for he cannot even quote me correctly. I said ". . . this is the first time that I have seen it stated publicly that a bill should not be read at all." Your correspondent's version of this reads, ". . . he has not before seen it publicly stated that a bill should not be used as reading matter, only as an account to be priced." The two statements are not by any means the same.

Mr. Vinycomb will see, if he refers to his previous letter, that he himself used the phrase ". . . the trade preamble which is intended as reading matter." Does he suggest now that the trade preambles do not form part of the bill? The plain and simple fact is that the whole of a bill of quantities is intended to be, and indeed must be, read before it can be priced, but that not all of the matter contained in it is required to be priced.

The quantity surveyor must be able to distinguish and to define; and in order to do this he must be able to use his native language (be it English or Ruritanian) accurately and without ambiguity. Your correspondent, while freely advising quantity surveyors on how to prepare bills of quantities, appears himself to have overlooked this requirement.

Incidentally, for his private ear, Bristol is not a town, but is a City and County in its own right, as a certain Government Department discovered to its cost in the Courts here recently.

AHREM.

Bristol.

*** This correspondence must now cease.—ED.

REGISTRATION OF SURVEYORS

To the Editor of *The Builder*

SIR,—Whilst I appreciate the trouble taken by Mr. MacDonald in investigating how much the "public" know about the definition of an architect or a surveyor (*The Builder*, June 6), I would point out that in all walks of life difficulty arises in the interpretation of the meaning of words.

Because of this fact I venture to suggest that he has presented a picture which can be misunderstood by those who still have no idea "What is an architect or surveyor," in so far that he has (a), in taking the Registration of Surveyors as an approach, presented complexities, (b) in his researches used too wide a yardstick in accepting the definition "because they have something to do with land and buildings," and (c), put up an "Aunt Sally" in the form of a gigantic register which would cost a big sum of money.

Taking (a), the complexities arise when one seeks to find where Registration of anything or anybody relates to the definition of a word. In seeking to secure acceptance, that the definition of an architect is "one who knows all about architecture," and of the surveyor . . . "one who knows all about surveying," Mr. MacDonald will, I am sure, be the first to recognise the humility of architects and surveyors when they freely admit that they do not know it all. A Register of the "know-it-alls" would obviously be unnecessary.

On (b) it is clear that the figures presented may be true. At the same time, one cannot in the same breath link "one who has something to do with land and buildings" with the specialist architect or surveyor. The appropriate "yardsticks" have been worked on throughout our history by the various Institutions and Societies which have formulated the measurements of a man's stature in his profession.

Let there be no doubt in the "public" mind on this vital point. From the oldest Institution to the youngest there persists a proud, jealously guarded code not only for the protection of the public but, equally important, of the honour and integrity of the professions.

There appears to be a smattering of ridicule in the words of Mr. MacDonald as he talks of the "number" who claim that they feel they have the right to become registered as surveyors. I am sure that it is not intended, for he will be fully alive to the fact that in this country—indeed, others too—any body, unless it has sincerity, truth, and honour of service within itself, must fall to failure. As and when the Registration of Surveyors may arise, *numbers* will be of little consequence. It will be the yardstick of quality, through ability, that will require definition, not the name.

Now (c); the "Aunt Sally," in the form of a gigantic register some 6½ in. thick, inclines to foolishness, for even the "public" know that a man can be registered in a particular profession by achieving the honour of belonging to certain bodies. Those bodies have their own lists of members. It will be on such separate lists that the registered surveyor's services will be available.

GORDON TOMALIN [M.I.Struct.E.].
Chairman of Council, Guild of Surveyors,
1, Gower-street, W.C.1.

GOVERNMENT SCHEDULES AND S.M.M.

To the Editor of *The Builder*

SIR,—Would any reader be so good as to enlighten me as to why Government Departments have their own schedules of measurement when the Committees of the R.I.C.S. and the N.F.B.T.E. have agreed to the Standard Method of Measurement? Surely such complete deviation by the aforementioned schedules from the S.M.M. only leads to confusion and a waste of time and money by all concerned?

B. J. SHAND.

4, St. Leonards-road, W.13.

DEFINING A SUB-CONTRACTOR

To the Editor of *The Builder*

SIR,—In your issue of May 30 an article appears under the heading "Sub-contractors and P.A.Y.E." dealing with doubts which have arisen about the responsibility for operating P.A.Y.E. for employees working for a sub-contractor.

The statement which you reproduce on this subject by the Inland Revenue distinguishes two classes of cases: first, those in which "a sub-contractor is carrying on business on his own account" and, second, those where, "on the other hand, the sub-contract is mainly for labour and the sub-contractor is in reality a gang-master in the employ of the principal employer." While it must be admitted that the scope of the term "sub-contractor" has never been so closely defined as to confer a prescriptive right to its use on any one class of employers, its extension to cover those who are admittedly really gang-masters is, I submit, a misuse. It is certainly not the sense in which the term is used in the title of this Federation nor could the term be applied in that sense to the members of the various Associations within our organisation.

D. C. MALLAM, Director,
Federation of Associations of Specialists and Sub-Contractors.
Artillery House, S.W.1.

SCOTS TO THE FORE

To the Editor of *The Builder*

SIR,—On reading the Notes and News in your issue of May 30, it struck me as being unique that for the first time there are three contemporary presidents of national chartered professional institutions drawn from Scotland and all with Glasgow connections, viz.: A. Graham Henderson, President of the R.I.B.A.; John Cassels Pinkerton, the new President of the R.I.C.S.; and myself, as President of the Institution of Municipal Engineers for 1952-53. All three received their professional education at Glasgow, and Pinkerton and myself were both members of the Trades House of Glasgow at the same time.

FRANK A. B. PRESTON.

Woodside,
Glenrothes, Scotland.

WASTE OF MACARONI?

To the Editor of *The Builder*

SIR,—The cartoon by "Acanthus" in your last issue shows a bewildered architect inspecting some fantastic and grossly wasteful plumbing to a wash-hand basin.

Is he aware, do you think, that the macaroni-conscious Italian plumbers have been so engrossed with their serpentine effects in the service pipes that they have quite forgotten to provide the basin with a waste-pipe?

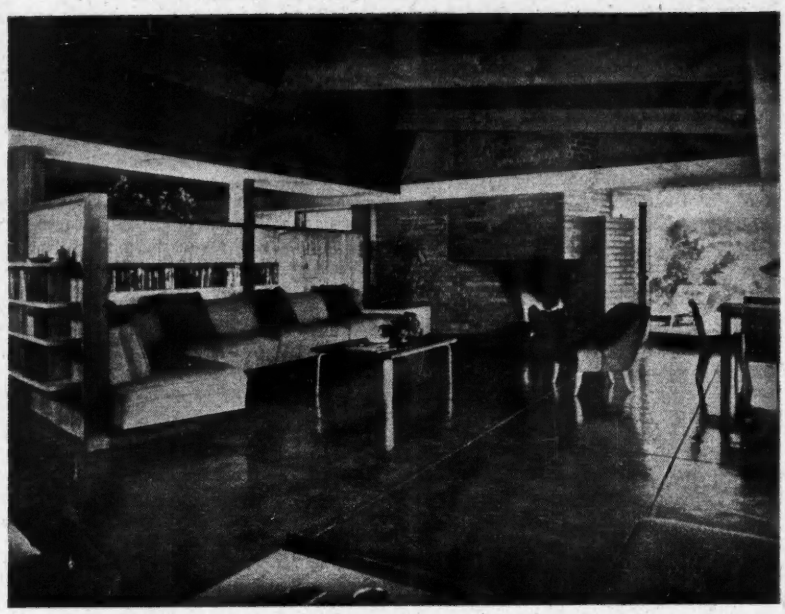
Or can the omission be put down to artist's licence, as on the job it might be put down to an inadequate building licence?

JOHN B. ANDERSON [A.R.I.C.S.].
The Elms, Erith, Kent.

THE CONTEMPORARY AMERICAN HOUSE

Triumph of the Modern Movement in Domestic Architecture

By G. J. HOWLING

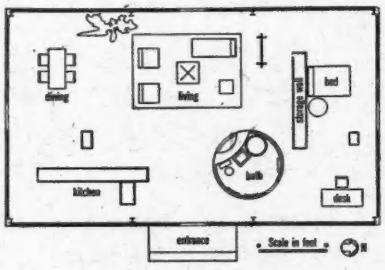


This house at Beverly Hills, California, with its use of exposed brickwork, rafters, etc., illustrates the modern tendency in the U.S.A. to throw-back to pioneering days. Douglas Honnold, architect.

"THERE are now several thousand house owners in the United States who have profited from the advances architecture has made in our time. That is not very many when almost a million 'housing units' are being built each year, but it is enough to indicate that the contemporary movement is not a transient thing. There is not an architectural student graduating from school these days who is trained in the traditional mannerisms, and scarcely an architect under 40 would happily design a 'period' house." This is an extract from the introduction to a collection of illustrations of contemporary American domestic architecture in an American book which has just become available in this country.*

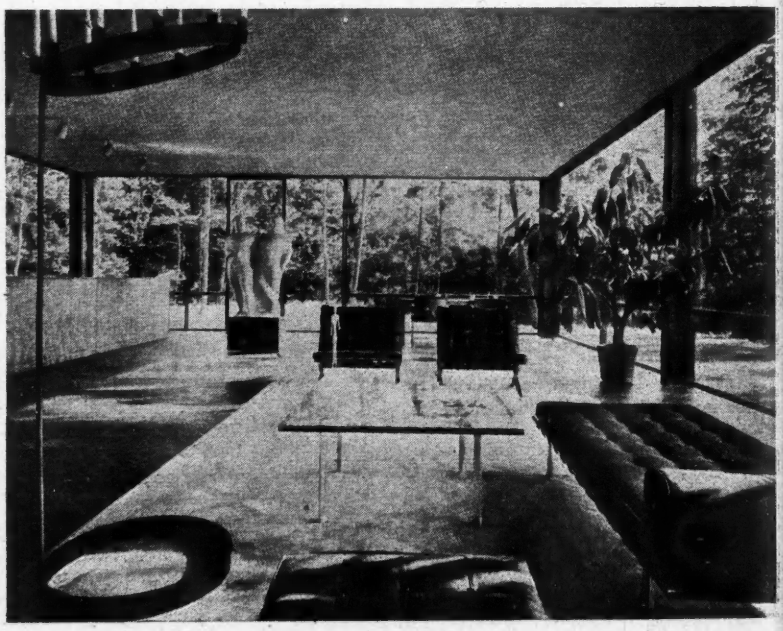
Eighty-five examples are illustrated and described, and as they come from all parts of the United States it is clear that

* The American House Today. By Katherine Morrow Ford and Thomas H. Creighton. London: Chapman and Hall. Price 64s. net.



NEW CANAAN, CONNECTICUT

One of the houses of revolutionary design that have recently been built in America. As the plan shows, the house really consists of one large room, divided by cabinets, pieces of furniture or statuary. Philip C. Johnson, architect.



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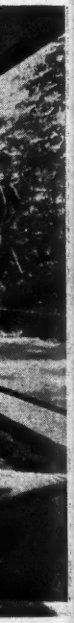


the contemporary movement is competing successfully with Colonial, Ranch House, Cape Cod and other manifestations of American taste in domestic architecture. As recently as the early 'thirties Frank Lloyd Wright was "ploughing a lonely furrow" in the vast expanses of the United States. To-day, as a result of his missionary activities and those of a small group of Middle European expatriates, the contemporary movement is apparently well under way. A few years ago the Transatlantic modernists could have been counted on the fingers of one hand; to-day, as this book shows, they are numbered by the score.

THE ARCHITECTURAL REVOLT

According to the introduction, the architectural revolt has "swept away the need for thinking in static terms of tightly enclosed, inward-looking rooms, and has substituted the privilege of using free, outward-looking space." Almost every house illustrated exemplifies that principle, at least to some extent. All the houses look very much alike. Nearly all are one storey high and of wood construction; roofs are mostly flat, and there are great expanses of glass in what would normally be called the elevations. Most of the plans—although naturally with one-storey buildings of any size there is a tendency to sprawl—are surprisingly compact, the "free" planning being confined to the living- and dining-spaces, which are mostly separated by the chimney flue, a piece of furniture or a low screen. Most of the houses look expensive; they occupy splendid sites commanding magnificent prospects and are often set in beautiful gardens with pools and other luxurious accessories.

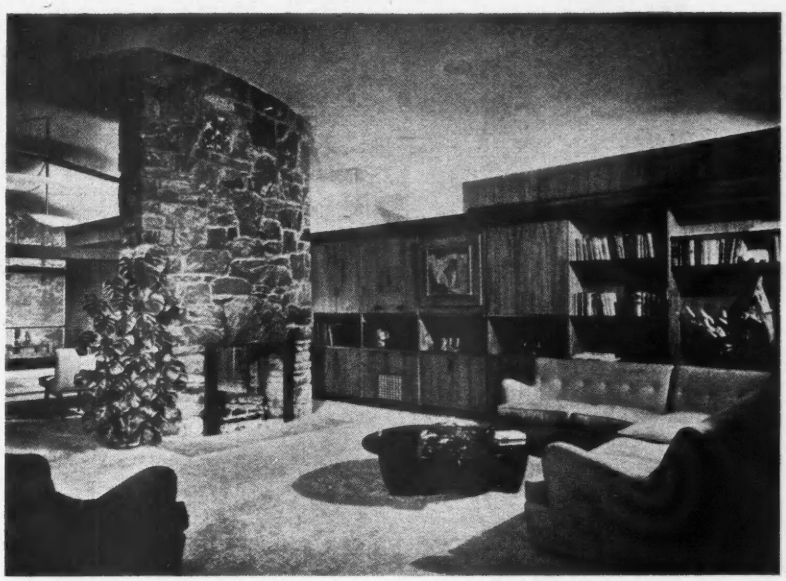
SEVERE INTERIORS

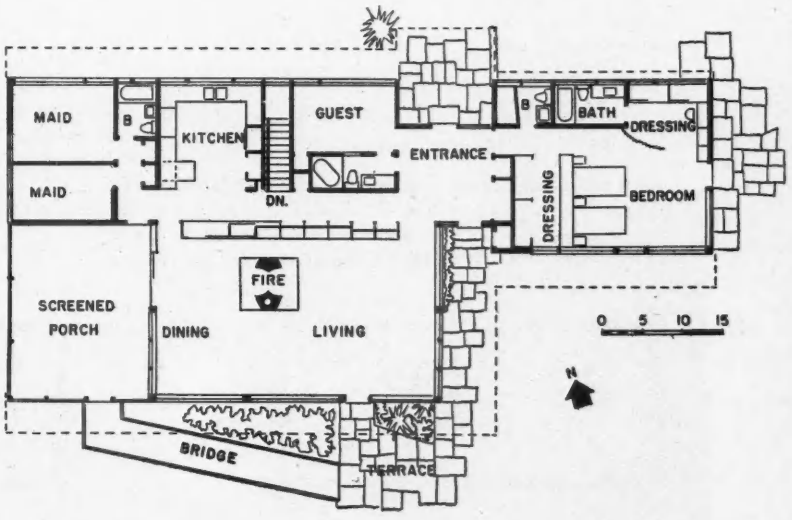
Interiors are generally severe and rely for their effect on the contrasting beauty of the woods used and the shape, pattern and texture of furnishings. Contrast is often provided, too, by large masses of rough masonry or exposed brickwork, particularly in chimney flues, and the effect is frequently—in photographs at least—bizarre. About many of these houses there is an oddly primitive look, due no doubt to these rough materials and to exposed beams in the ceilings. Is this a conscious throw-back to the pioneering days? Whatever the explanation, Middle-European modernism has undergone a sea-change in its translation to the American wilds.

REVOLUTIONARY DESIGNS

One or two of the houses illustrated are quite revolutionary, "New Canaan," Connecticut, for example, designed by Mr. Philip C. Johnson for himself, a bachelor who "likes to live in close relationship with nature." It is described as "a rectangle defined by all-glass walls which are framed with delicately scaled steel members. Although it is consciously subdivided into areas for conversation, dining and sleeping, the division is accomplished by cabinets and cupboards, by the location of a piece of sculpture and a painting, and by the placement of furniture. Thus the house is really one large room, with a circular brick core, 10 ft. in diameter, containing the bathroom and the fireplace. Over-night guests are taken care of in a separate brick structure. This is as near to living outdoors as one can come. The glass walls keep out the rain and the cold, and at the same time make it possible for the house to be fully exposed to the surrounding natural landscape." The house is radiant heated with coils in floor and ceiling, and presumably there are few of its kind. The other illustrations accompanying this notice are given to show the compact nature of much of this so-called "free" planning and the contrasting effects which are so often obtained by the use in close conjunction of rough and smooth materials.

It is not likely that the Americans, with their wealth, their inventiveness and desire for change, will long remain content with the current achievements of the architectural profession as shown in this book. The editors say they are "ready for the next development." In this hard-pressed country we shall watch for it with perhaps slightly sceptical interest.





This house at Chappaqua, New York, shows the use of contrasting rough and smooth materials in interiors. The free-standing fireplace in the photograph sub-divides the dining- and living-rooms. Designed by Architects Associated.

The entrance front.

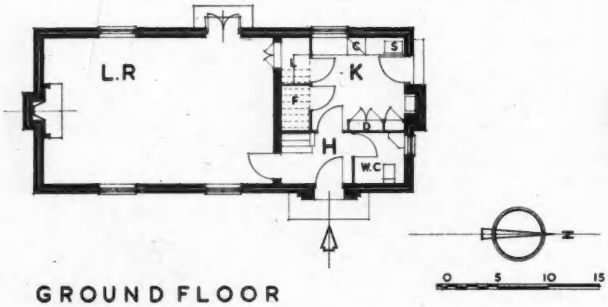
"LITTLE MUNDYS": A HOUSE AT BALCOMBE, SUSSEX

EDWARD FORSTER, BA, FRIBA (ANDERSON, FORSTER & WILCOX), ARCHITECT

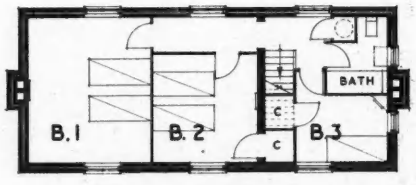
THIS house was built to conform with the regulation imposing a maximum floor area of a thousand square feet in force at the time of its construction in 1948. The living-room, which is 22 ft. 5 in. by 14 ft. 2 in., serves also as dining-room with service hatch direct to the larder. There is, however, space provided for a future dining-room with a bedroom over to be centred on the central window at the rear.

Both ground and first floors were built in concrete in view of the shortage of timber, and covered with cork tiling in the principal rooms. The brickwork is in the local Freshfield Lane stocks, and the roof in a duncoloured hand-made tile. The elevational treatment is designed to conform with the traditional character of a Sussex village.

The main contractors were Messrs. T. J. Braybon and Son, Ltd., of Brighton, and the sub-contractors were: Bricks, Freshfield Lane; windows, Crittall Manufacturing Co., Ltd.; floors, Phillips Floors, Ltd.; sanitary fittings and fireplaces, J. S. and F. Folkard, Ltd.; cork tile flooring, E. J. Elgood, Ltd.; door furniture, Yannedis and Co., Ltd.; electrical, Belshaw and Co., Ltd.; kitchen fitments, H. Newsum, Sons and Co., Ltd.



GROUND FLOOR



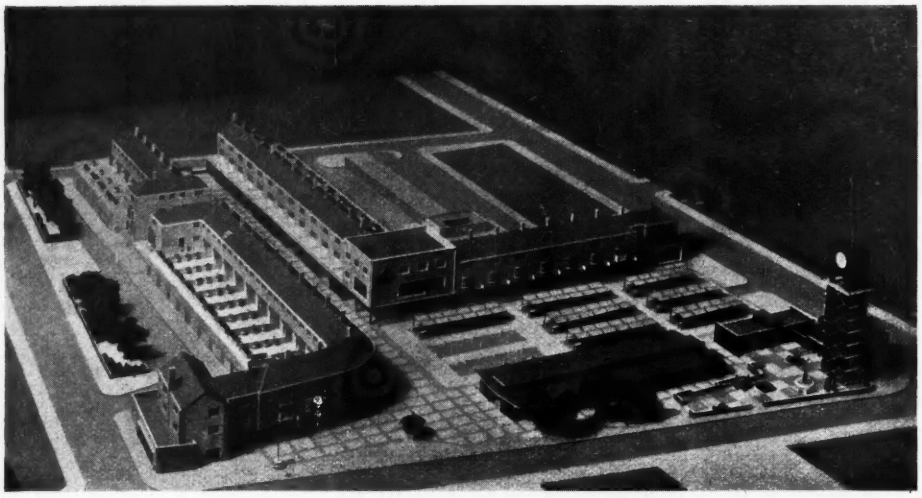
FIRST FLOOR

The living-room, looking towards the fireplace.

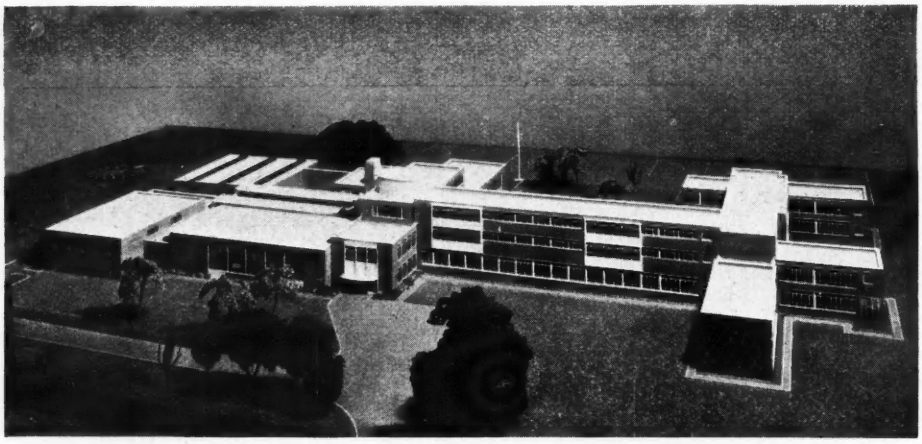
"LITTLE MUNDYS": A HOUSE AT BALCOMBE, SUSSEX

The garden elevation.

ARCHITECTURE AT THE ROYAL ACADEMY EXHIBITION, 1952



CHRISP STREET MARKET, POPLAR : FREDERICK E. GIBBERD, FRIBA, ARCHITECT



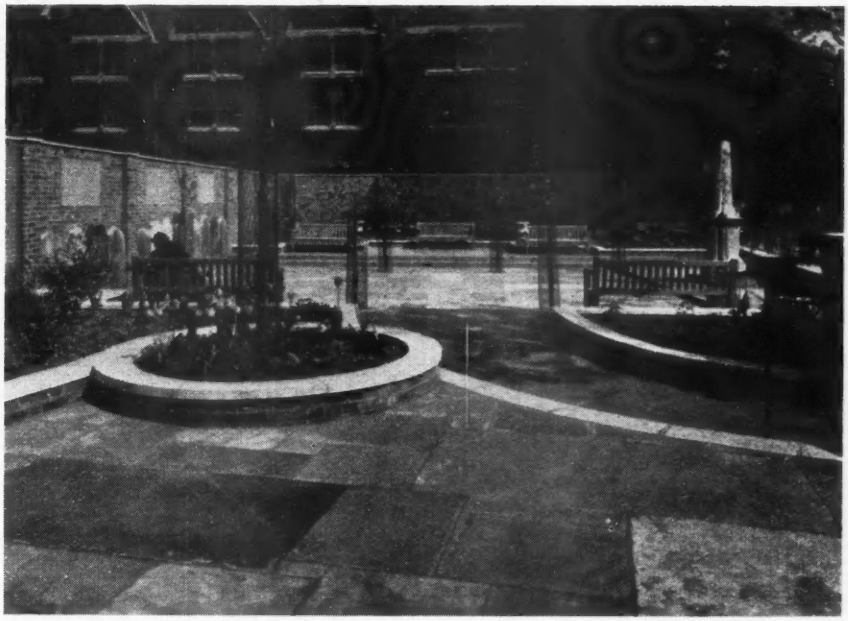
CHISLEHURST AND SIDCUP COUNTY GRAMMAR SCHOOL FOR BOYS, LAMORBEY PARK : HOWARD V. LOBB AND PARTNERS, ARCHITECTS

Drawn by J. D. M. Harvey.

BARCLAYS BANK (DOMINION, COLONIAL AND OVERSEAS), BARBADOS: W. H. WATKINS, GRAY AND PARTNERS, ARCHITECTS

OLD CHURCH GARDEN, ST. MARYLEBONE

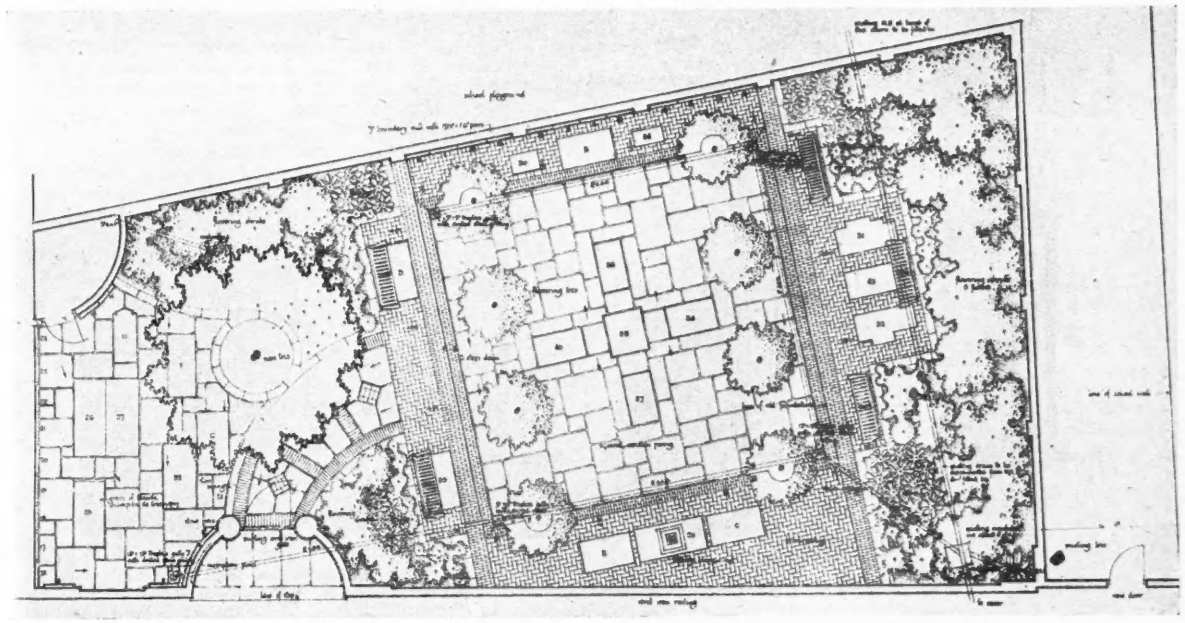
LOUIS DE SOISSONS, ARA, AND PARTNERS, ARCHITECTS



A corner view of the garden.

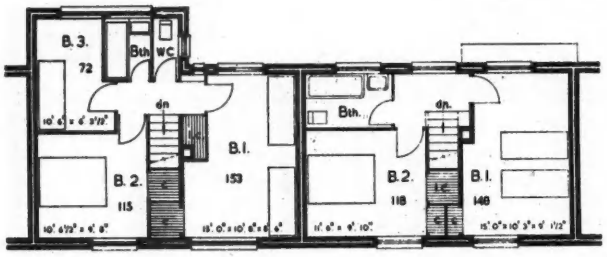
THIS garden of rest commemorates the site of the old Parish Church of St. Marylebone which was first built in 1400, rebuilt in 1741 and demolished in 1949. The sunken portion of the garden marks the actual foundation of the church dedicated to St. Mary. The river Tyburn flowed nearby and thus the village took its name of St. Mary-le-bourne. The old church had many historic associations. Francis Bacon was married there; Charles Wesley, brother of John Wesley, and James Gibbs, architect, pupil of Sir Christopher Wren, were buried there; it was also the church where Lord Byron was baptised, where Lord Nelson worshipped and where the baptism of his only son, Horatio, took place. When work began on the garden last year, the many graves were covered in, the old stones reverently taken up, stored and then relaid, together with some additional York stone paving, in symmetrical array. The ancient foundations of the church—probably those of the mediæval church of 1400—were carefully exposed but, owing to their poor condition, had to be bricked over. Their outline, however, remains.

The general contractors were Messrs. Yeomans and Partners, Ltd. The paving and the Portland stone copings, etc., were carried out by W. Benfield and Son; the balustrade and gates were made by Hurst, Franklin and Co., Ltd.; the artificial stone by Girlings' Ferro-Concrete Co., Ltd., and the planting was done by William Wood and Son, Ltd., under the direction of Mr. M. Sefton, N.D.H.

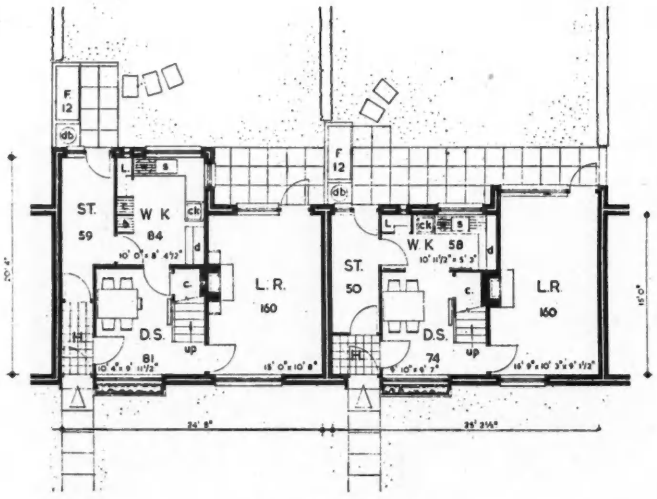


Plan of garden

Above are (left) a pair of Fig. 1 (5-person s.-d.) houses; a block of one Fig. 16 and three Fig. 17 houses (5-person and 4-person terrace); and, to right, a block of four Fig. 3 houses (5-person terrace). Figure numbers relate to "Houses, 1952."



FIRST FLOOR



GROUND FLOOR

Plans of Fig. 16 (left) and Fig. 17 houses (5- and 4-person terrace).

PEOPLE'S HOUSES AT CANTERBURY, KENT

L. H. WILSON, OBE, ARIBA AMTPI, CITY ARCHITECT AND PLANNING OFFICER

THE houses shown in these pages are part of a group of 14 built to plans shown in "Houses 1952." They were opened on May 12 by Mr. Ernest Marples, Parliamentary Secretary to the Ministry of Housing and Local Government. Five types were erected to the following plans: Fig. 1 (3-bedroom, 5-person s.-d. houses); Fig. 2 (2-bedroom, 4-person s.-d. houses); Fig. 3 (3-bedroom, 5-person terrace houses); Fig. 16 (3-bedroom, 5-person terrace houses); and Fig. 17 (2-bedroom, 4-person terrace houses).

The City Architect is satisfied that the costings are reliable. Rents have been fixed as follows:—

2-Bedroom Houses

17s. 6d. + 8s. 7d. rates = 26s. 1d.

3-Bedroom Houses

19s. + 9s. 9d. rates = 28s. 9d.

COSTINGS

THREE-BEDROOM PAIRS (FIG. 1)

Cost per House

	£
Work up to Damp-proof-course ..	95
Superstructure	1,012
Outside Works	77
	£1,184

Floor Area

	sq. ft.
House	855
Outbuildings	62
Total	sq. ft. 917

Floor Heights

Ground Floor	7 ft. 6 in.
First Floor	7 ft. 6 in.
Frontage per pair	40 ft. 9 in.

TWO-BEDROOM PAIRS (FIG. 2)

Cost per house

	£
Work up to Damp-proof-course	85
Superstructure	870
Outside Works	77
	£1,032

Floor Area

	sq. ft.
Houses	679
Outbuildings	63
Total	sq. ft. 742

Floor Heights

Ground Floor	7 ft. 6 in.
First Floor	7 ft. 6 in.
Frontage per pair	37 ft. 7 in.

THREE-BEDROOM TERRACE BLOCK (FIG. 3)

Average cost per house

	£
Work up to damp-proof-course	111
Superstructure	985
Outside Works	77
	£1,173

Floor Area

	sq. ft.
House	859
Outbuildings	62
Total	sq. ft. 921
Frontage per block of 4 houses	106 ft. 7 in.

BLOCK OF OPEN-PLAN HOUSES (FIGS. 16, 17)

Cost per 3-Bedroom House

	£
Work up to damp-proof-course	101
Superstructure	1,108
Outside Works	77
	£1,286

Floor Area

	sq. ft.
House	826
Store	71
Total	sq. ft. 897

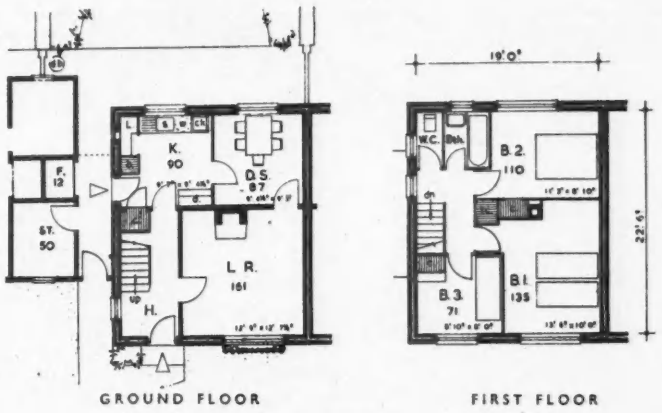
Cost per 2-Bedroom House

	£
Work up to damp-proof-course	91
Superstructure	969
Outside Works	77
	£1,137

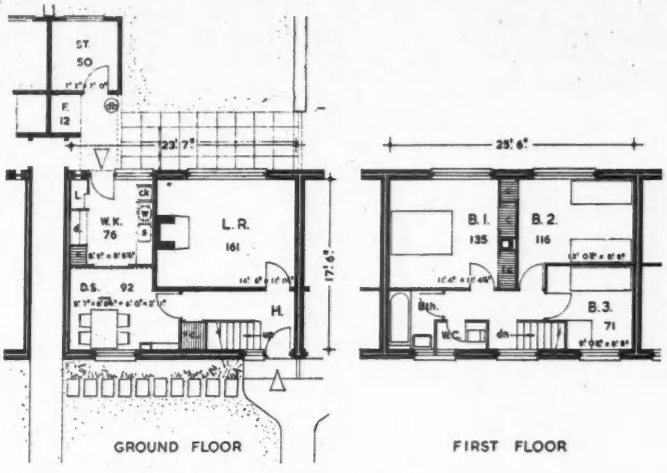
Floor Area

	sq. ft.
House	722
Store	62
Total	sq. ft. 784

The open-plan houses have the staircase rising from the dining-hall space, and to counteract draughts have radiators at the top and bottom of the stairs.



Plans of Fig. 1 houses (3-bedroom, 5-person s.-d.).



Plans of Fig. 3 houses (3-bedroom, 5-person terrace).

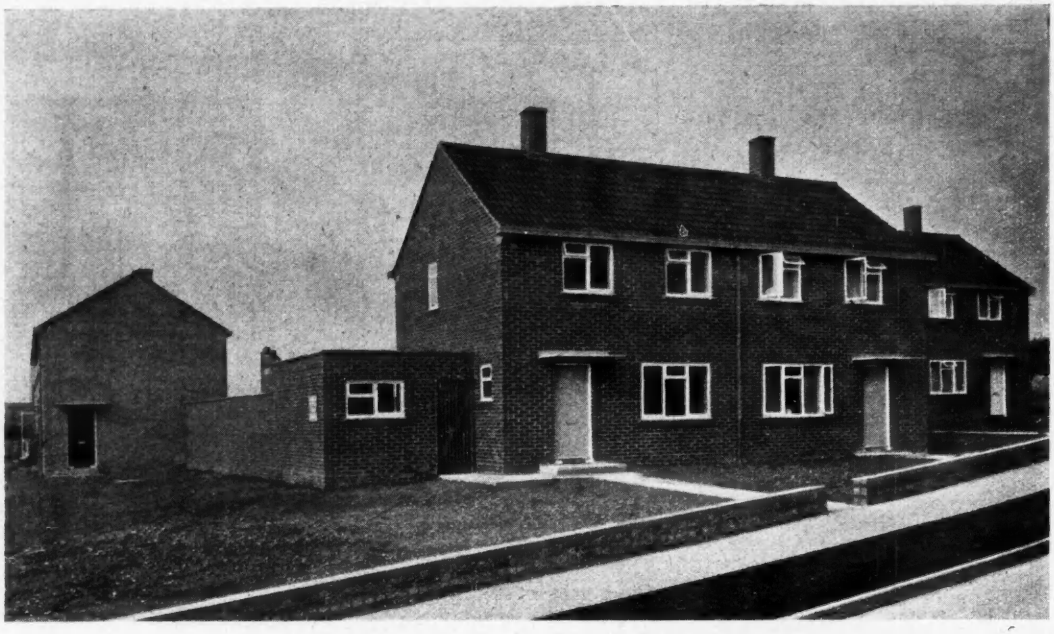
These figures are obtained by pricing bills of quantities based on rates in bills in current contracts by the same contractor. They do not include the February increase in wages and exclude cost of sewers, roads and pavements. They include fencing, gates, paths, screen and boundary walls.

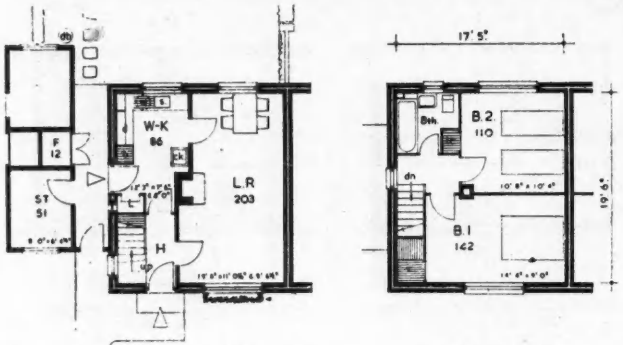
The houses were built by the Corporation at the request of the Ministry of Housing and Local Government. The Senior Regional Architect approached Mr. Hugh Wilson on January 16, working drawings were prepared and work started on the site on February 1, and the buildings were completed in three months. One house of each type was left unoccupied and open to inspection by local authorities and the public, and were visited by 42 local authorities.

Interior of Fig. 17 houses (the open plan 2-bedroom type). Dining-hall space has a sliding door communicating with kitchen. There is a radiator at foot of stairs.

OUTLINE SPECIFICATION

Bricks	Eastwoods "Otterham Mild Stocks" or "Conyer Multi."
D.P.C.	"Astos."





GROUND FLOOR FIRST FLOOR

Seen above are two pairs of Fig. 2 houses; these are of the 2-bedroom s.-d. type. Shown also is the outbuilding and screen wall connecting to gable end of Fig. 3 house. On left are plans of Fig. 2 houses.

Lintols	R.C. lintols over all openings internally and under eaves. Reinforced brickwork over window and door openings externally.
Copings	Precast concrete.
Hoods	In-situ concrete reinforced No. 9 B.R.C.
Paths	3 in. concrete.
Fences	Concrete post and wire.
Gates	1¼ in. ledged and braced covered with slats.
Clothes posts	Concrete.
Partition walls	4½ in. brick, 2 in. or 3 in. breeze.
Flashings	3 lb. lead.
Eaves	"Finlock" concrete gutter units.
Fireplaces	Tiled slab surrounds and hearths.
Cills	Langboro buff concrete tiles.
Roof tiling	Double Roman concrete tiles on 2 in. by 1 in. battens, 13¾ in. gauge, reinforced roofing felt.
Outbuildings	Corrugated asbestos roofing.
Floor paving	"Marley" asphalt tiles on screed.
Joists	Timber.
Roofs	T.D.A. trusses and roof construction 33½ pitch.
Flooring	1 in. nominal T. and G.
Staircases	1 in. treads, ¾ in. risers, 11 in. by 1¼ in. strings, 4 in. by 1 in. capping, 2 in. mopstick handrail.
Skirtings	3 in. by ¾ in.
Picture rail	Stock pattern in living-room only.
Coat rail	3 ft. length in hall.
Kitchen Cupboards	P.C. £12.
Draining board	1 in. hardwood.
Doors	P.C. sum £25.
Wood windows	P.C. sum £33.
Cupboard, linen and larder doors	Contractor's hardboard doors.
Ironmongery	P.C. sum £8 10s.
Dustbins	P.C. sum £1 5s.
R.W.P.'s	Asbestos.
*Firegrate	P.C. sum £8.
Washboiler	P.C. sum £8.
Plastering	Ceilings: ⅛ in. plasterboard with setting coat. Walls: Floated and set in gauged lime.
Hot and cold water installation	P.C. sum £60.
Water service	P.C. sum £6.
Waste pipes	Copper internally, asbestos externally.
Sanitary fittings	P.C. sum £24 10s.
Soil and vent pipe	Cast iron.
Gas service	P.C. sum £14.
Electrical Installation	P.C. sum £45.
Electricity Service	P.C. sum £6.
Painting	All doors, windows, fittings, skirtings, picture rails, etc., twice painted.
Staining	Stair margins, cappings and mopstick stained.
Walls and ceilings	Two coats distemper.

*NOTE.—Houses Fig. 16 and 17 had Ideal 2B Neofire with individual cylinder. P.C. £24 10s.

All P.C. sums apply to one house.

The building contractors were Messrs. K. A. Hawkes, Ltd., Birchington, Kent. Sub-contractors and suppliers were: Sanitaryware, fireplace surrounds and back boilers, A. Olby, Ltd., Ramsgate; roof tiling, Charles Bates, Canterbury; floor tiling, Marley Tile Co., Sevenoaks; doors, Gliksten Doors, Ltd.; ironmongery, Lockerbie and Wilkinson, Ltd., Tipton, Staffs; wood windows, Rippers, Ltd., Halstead, Essex; electrical installation, S. W. Bligh, Ltd., Canterbury; bricks, Eastwoods, Ltd., Gillingham, Kent; precast gutter units, Finlock Gutters, Ltd., Tunbridge Wells; Neofires and radiators, Ideal Boilers and Radiators, Ltd., Hull; gas installation and service washboilers, South-Eastern Gas Board, Canterbury; electrical service washboilers, South-Eastern Electricity Board, Canterbury; water service, Canterbury Gas and Water Co.; paints, Hadfields (Merton), Ltd., Mitcham; distemper, Walpamur Co., Darwen; and hot water installation, kitchen units, K. A. Hawkes, Ltd.

Jefferson's Influence on American Architecture

YALE UNIVERSITY CONFERENCE

A PICTURE of Thomas Jefferson as a gifted architect and city planner was presented recently for the benefit of more than 50 city planners and architects attending a civic art conference at Yale University, U.S.

Jefferson's intense interest in the arts "was not merely part of his universality as a man," declared MR. FISKE KIMBALL, Director of the Philadelphia Museum of Art and of the Thomas Jefferson Memorial Foundation. "His interest had also a civic aspect. With Jefferson, as he developed from a young man, all art became civic art."

Mr. Kimball placed Jefferson's influence on civic art in America as starting at the age of 24, when the young patriot began to plan his own house. "He sought to bring to Virginia," he stated, "works which would give a higher idea of art than anything yet in the Colonies. He listed, to be obtained in Europe, masterpieces of sculpture, painting, portraiture. He took pains to secure also portraits of figures more distant in the American past."

Whereas most of these were private enterprises, Mr. Kimball said Jefferson was equally active in securing worthy historical portraits as public monuments. The effort to commemorate events of the Revolution likewise enlisted the assistance of Jefferson.

But it was in architecture, the lecturer declared, that Jefferson "made his principal effort to improve the style of his country. Admiring as we do the great Tidewater houses of Virginia, it is hard at first for us to understand Jefferson's strictures on the buildings of Virginia. His first effort to achieve improvement in them was in building his own house, Monticello. This aimed to show houses modelled on 'the Ancients' designs of country houses."

Mr. Kimball traced Jefferson's influence on the design for Washington "which he brought to the banks of the Potomac." In his plans for the new capital many ideas were ultimately adopted, others dropped. Later, as President, Jefferson saw the completion of the Hall of Representatives "with some suggestions from himself." At the President's House it was he who designed the colonnaded service wings opposite the basement on either side.

"The success in American civic art of the movement led by Jefferson," Mr. Kimball declared, "was enormous. The classic revival, which he had so much furthered, everywhere carried the day. At his death unity of doctrine and of practice were almost complete."

Monumentality

Earlier in the conference, DEAN PIETRO BELLUSCHI, of the Massachusetts Institute of Technology, in a paper on monumentality, said that he viewed modern architecture as a deep, far-reaching attempt of a great new society to understand itself, a movement of such vast importance that it could only be compared with very few other epochs of the past, perhaps only with those formative ages preceding the creation of what we called now "the great styles."

"It implies a determination to grasp the meaning of the great forces which seem to be shaping our destiny," he continued. "It is, therefore, no longer measured by our subjective and emotional reactions alone, but by a reasoned appraisal of all our materialistic achievements from which the æsthetic symbols of our civilisation must eventually come, if they ever will."

Dean Belluschi said the modern architect was becoming the interpreter of technical and social progress. "If this is true," he said, "his monuments are also interpretations, not imaginative flights from reality. They are mirrors of a utilitarian society which no longer really believes in God or kings. The power by which mankind built monuments in the past to convey the mystic concept of divine guidance and mystery is now channelled into the very human goal of creating abundance, utility and pleasure for the people.

"If you refuse to accept these premises, then we cannot escape the simple fact that our society is incapable of creating monumentality as you would wish to define it."

Altar of Functionalism

In another paper on "The Problem of Monumentality," MR. HENRY HOPE REED, Jnr., Assistant in City Planning at Yale, said:

"We have given up the little ornaments that answer an emotional need. Out of fear of being influenced in any way, we have sacrificed the past, learning, the crafts, all the arts, on the altar of 'honest functionalism.' In so doing we have given up the means of attaining what Ruskin called sublime architecture, the very stuff which makes a city beautiful, the jewels in the civic designer's diadem.

"We may have put together well-built factories, but have we built great monuments? Along with the past and with ornament we have tossed out the monumental."

Mr. Reed criticised the United Nations Building. "Here is the pride of America's mid-century," he said. "Where is the sense of security which stone brings? The eye travels up and down in search of relief, something to grasp. It is cheated, for this building has no beginning and no ending."

Inside the building Mr. Reed found conditions no better. "Again the architects have pursued the antiseptic game relentlessly," he said, "and spread hygiene to every bleak corner. What a relief it is to flee the cold, down one of New York's untidy streets into the warmth of urban clutter."

HOUSING PROGRESS REPORT

Figures for April

THE HOUSING SUMMARY presented to Parliament on June 5 as a White Paper* jointly by the Minister of Housing and Local Government and the Secretary of State for Scotland, shows that the number of permanent houses completed in Great Britain during April was 17,401 compared with 15,123 in April, 1951.

In the first four months of 1952, 71,010 permanent houses were completed compared with 59,014 in the same period of 1951.

The total number of houses completed under the post-war programme is now 1,224,505 (1,087,359 permanent and 157,146 temporary).

*Cmd. 8,568 Housing Summary, April 30, 1952, H.M.S.O., price 2d.

Building in Oxford

PROGRESS DESPITE LICENSING DIFFICULTIES

From a Correspondent

THE Summer number of "Oxford," the quarterly magazine of the Oxford Society, contains much interesting information about the progress of building in Oxford. The oldest historical feature of the city is the Castle Mound close to the prison, and indeed it was at one time within the prison walls. It is now being cleared of its tangle of shrubbery and deformed trees. The accommodation available in the Holywell Music Room has been extended, and the ugly wooden entrance passage has been removed. The architect has taken the opportunity of erecting a new porch and doors in keeping with the building.

In the colleges there has been a good deal of tidying up and redecoration. At Brasenose a memorial, designed by Mr. Edward Maufe, R.A., F.R.I.B.A., fills the east wall of the small cloister leading to the chapel. This chapel, which for 60 years had become darker as dirt was added to the deep green of the walls, has been repainted in a light colour.

The stonework of the library at Christ Church, like that of so many other college buildings, has been decaying, and is having to be thoroughly repaired. The buildings of Keble College continue to sprout bathrooms and the "usual offices" in unusual places, but the plans for building a new block with the money so generously given by the Frenchman the late M. Besse have been held up by the refusal of the necessary licences. It is hoped to start in the autumn of this year.

In New College work continues on the libraries with a new staircase giving access to the Founder's Library, and another pair of stairs to be built to the Wyatt Library.

Oriel College, where the present Bishop of London was at one time Tutor, has for a long time been handicapped by very poor lecture rooms. A new building is being built in Canterbury-square to provide a garage and two lecture rooms and a neighbouring building has been converted into flats. St. John's College was the first to provide post-war rooms for undergraduates, and these, designed by Mr. Edward Maufe, are proving to be most convenient and modern with their comforts, including baths in the basement.

Wadham College, the Warden of which, Sir Maurice Bowra, is at present Vice-Chancellor, has been the scene of considerable building activity, including a new club room for undergraduates, a library and a new squash court.

Lady Margaret Hall has added to its property by acquiring an adjacent house to be converted into flats for married Fellows. The new wing of the main building of the St. Anne's Society [illustrated in *The Builder* of May 30] has been completed, and is regarded as one of the finest examples of the work of Sir Giles Gilbert Scott, being at once dignified and friendly.

In short, Oxford, so far as building licences will allow, is bringing itself up to date.

STRUCTURAL REPAIR OF ANCIENT BUILDINGS

Their Preservation for Future Generations

HOW the general principles which formed the basis of the work of the Society for the Protection of Ancient Buildings could be applied to the preservation, for future generations, of churches and other historic buildings which, through one cause or another, had developed structural weakness, particularly in masonry, was the subject of a lecture by Mr. John E. M. Macgregor, F.S.A., F.R.I.B.A., and Mr. J. S. Wilson, M.Inst.C.E., Hon. A.R.I.B.A.

The lecture, under the general title of "Structural Repair," was one of a series arranged by the S.P.A.B. It was divided into three parts. The first part, entitled "Causes of Failure," was delivered by Mr. MACGREGOR, who pointed out in some introductory remarks the need for a full appreciation of the irreplaceable value of ancient buildings. He said that before discussing the technical methods, etc., of dealing with the structural repair of such buildings, it was advisable to consider what they meant to us and what our final aim should be. Mr. Macgregor continued :

A postage stamp when issued is of but little value as it is one of many, but with the passage of time its duplicates disappear, and although printing methods may have improved in the interval, so that its current counterpart may, from the technical point of view, be greatly superior, the actual intrinsic value of the old stamp has increased out of all comparison with its original cost or that of the new one. Furthermore, the very post-mark it bears may well increase its worth and the removal of such a mark would unquestionably detract therefrom. The most faithful reproduction is valueless.

Again, when one meets a life-long friend, although one sees him as he is today, his very countenance brings back memories of him in the past, re-awakening perhaps some mutual schoolboy experience. So an old church, which in succeeding centuries has seen many alterations and additions, some good, some bad, but all bearing their own contemporary stamp, has acquired a new countenance. The building can no longer be measured solely by the three dimensions of length, breadth and height, but has acquired a fourth intangible character or dimension, through the passage of time—the genuine stamp of life.

The building has attained an appeal, a grace, which is beyond the power of man to produce in a single epoch, a subtle, very vulnerable value, which is easily and irreparably destroyed.

One does not wish to regard every old building as a museum piece, stored in a glass case, but rather as a living entity, which has served past generations and we hope will serve many to come ; we should ever be mindful of this fourth dimensional attribute, and we should strive, while stabilising a faulty structure, to keep our works as much as possible in the background, but where complete subjugation is impossible we should let our works tell their tale in a simple and straightforward manner.

If at the conclusion of a work of this nature, which one knows has been well and economically carried out, the complaint is made that one cannot see where all the money has been spent, the complaint becomes a supreme compliment.

CAUSES OF STRUCTURAL FAILURE

Having now outlined a mental approach to the problem of structural repair, let us consider first the causes which bring about failure : (*a*) The uneven loading of the various parts of a building, the varying weight of tower and nave, the concentration of loads on an arch and pier, the contrasting weight of a medieval chimney stack and the timber-framed wall.

(*b*) The uneven bearing, such as soil of different nature, violently sloping site, etc. ; (*c*) Moving bearings, that is soil subject to horizontal and vertical expansion and contraction due to spasmodic saturation and drying of soil, such as clay ; (*d*) The static and moving soils, as under the inside and outside portions of the same foundation of an external wall.

(*e*) The horizontal thrust of arches, vaults, roofs ; (*f*) The compression and disintegration of walling materials, poor or hollow cores, etc. ; (*g*) The vibration from swinging bells, passing traffic and bomb blast ; (*h*) Finally, there is the action known as "drift." This movement is mostly horizontal, caused by expansion under heat and subsequent contraction, and the opening of cracks, which become jammed with grit before the next contraction. The action is exceedingly minute, but over a long period may prove considerable. It is chiefly met with in vaulted structures.

The effect of these various failures can usually be recognised and the trouble diagnosed in the following ways : (*a and b*) *Uneven loading and uneven bearing*.—These have very similar effects, but are usually not likely to be confused. They can be recognised by the distortion of horizontal lines, such as string courses, etc., inclination of vertical lines towards the sinking portion and shear cracking, the cracks stepping out over the sinking portion owing to the inherent corbelling effect of coursed masonry.

(*c*) *Moving bearing*.—Bearings with horizontal movement show themselves by floor cracks and vertical movement by inclined cracks, the widths of which vary with the seasons.

(*d*) *Static and moving bearings*.—The action taking place where the soil beneath a foundation is at one point subject to vertical expansion and contraction through varying moisture content, while at another it is permanently dry, is not sufficiently well appreciated. The soil beneath the roof of a building being permanently dry is static, while that around a building receiving no such protection, becomes periodically saturated and moving and therefore compressible.

On account of this action, every external wall of any thickness will tend to lean outwards, every western tower will tend to lean westwards, and every outside wall will tend to sink in relation to a central stack.

(*e*) *Horizontal thrust*.—Failure due to such thrust manifests itself by the sinking of arch crown and cracks above the arch converging together. Failure from roof thrusts shows by inclination of walls, parting of tie beam anchorages, opening of joints of curved braces, etc.

(*f*) *Compression*. — Failure through crushing shows itself in spalling at angles and joints between and causes, in the case of poor cores, the bulging of ashlar or flint facing. The upwards rise in the centre of a window cill may be due to the compression of the masonry beneath jambs on either side or the expansion of the masonry beneath the window itself

(*g*) *Vibration*.—Vibrations of swinging bells usually produce a series of parallel vertical cracks, which may be only a hair-breadth in width.

(*h*) *Drift*.—The effect of "drift" may show in many ways. That the action does take place should be borne in mind, and may be the answer to some otherwise inexplicable defect.

STRUCTURAL REPAIR

Scientific Recording

THE SECOND PART of the lecture, which dealt with the scientific recording of defects in old buildings, was read by MR. WILSON, who said :

Settlement Defects.—Defects in buildings are caused by movement of some kind. They may be due to settlement of foundations or movement resulting from a tendency to move inherent in the design. Unless built on rock, the weight of a structure resting on any kind of subsoil compresses it and there is certain to be some settlement, negligible or very small on some materials and appreciable on others. Settlement of this kind takes time, and in some cases, years may elapse before the building gets fixed and immovable. The amount of this settlement may be different in different parts of the building and cracks and distortion may develop, but when the settlement comes to an end, these developments cease.

Evidence of settlement such as described can be seen in many old buildings. I know a church in which parts are much out of shape, but I have proved that the inclination of parts much out of plumb has not increased as much as 1/100 inch in a height of 18 ft. in ten years. The distortion probably occurred soon after completion, but in an old building during the centuries it has stood, there has been plenty of time for many things to happen and the influence of mild earthquakes or earth tremors cannot be ruled out.

Where the subsoil is clay, compression or movement peculiar to clay may be repeated many times with distressing

effect. A large mass of clay seems to be subject to the influence of drought. A severe drought dries the clay causing movement, and although one drought may not do much damage, the cumulative effect over a long period may wreck a structure.

EFFECT OF BOMB DAMAGE

With regard to bomb damage, a building may be shattered in some parts and rendered unstable in others in severe cases, or it may be severely shaken and cracked. It should be remembered in such cases that the influence which caused the damage was momentary, and that there is no continuation of the damaging influence such as would be the case with weak foundations.

The rocking of the building and waves of concussion caused by the explosion will have opened cracks, but unless the stability of the structure has been affected by a part being blown away or forced out of plumb the stability need not be appreciably affected. It is probable that cracks would have closed up immediately after they had been formed if displaced mortar and dust had not prevented it. In a church I have had under examination, cracks caused by a bomb explosion in 1940 had not appreciably widened or altered by 1951.

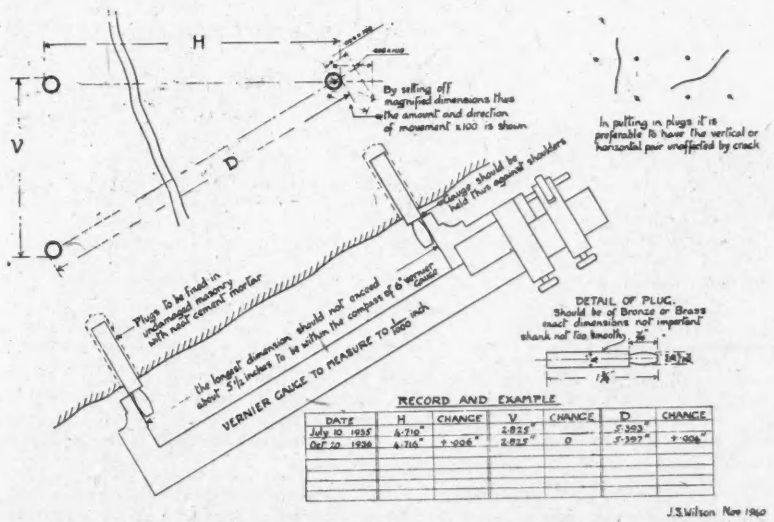
Tendencies to move inherent in design occur in arched structures. The horizontal east to west thrust of the arches in arcades almost invariably succeeds in the course of years in pushing the west wall of a church out of plumb. Although the resistance to the thrust of arches in an arcade may be adequate, a minute racking influence is introduced by seasonal changes of temperature. Masonry, like all materials, expands when heated and an arch would tend to rise and increase in span in the summer, and go back in the winter. Although very minute, such seasonal movements open joints or form cracks due to contraction in the winter. The following expansion would simply close the crack if dust and particles of mortar had not got dislodged in the crack and prevented it from closing. Over a long period of years this racking influence introduces appreciable movement.

In diagnosis, evidence of what has happened may be revealed by the plumbing of walls, columns, etc., and checking the levels of floors and plinths and examining cracks and defects. In making deductions from plumbing and level measurements it must be remembered that when built the walls and floor may not have been exactly vertical or level.

Evidence of what is happening can be secured only by making measurements at intervals over a period of time. Whether the width of a crack increases or diminishes in course of time if left to individual observations is often answered by diametrically opposed conclusions. Labels of paper, glass or cement fixed across a crack can give evidence of movement, but it is only qualitative and not satisfactory. Paper shrinks and buckles and is not worth using. Glass is not easy to secure and may become detached. Cement labels will part and show a hair crack if there is a tendency to open, but if the crack tends to close, one end of the patch becomes detached from the masonry without showing much evidence of any movement. In measurements made over a period of time, if the method used is unreliable, valuable time is allowed to elapse without getting the evidence wanted.

BEHAVIOUR OF CRACKS

Many years ago, I developed a quantitative method of observing the behaviour of cracks which I think has advantages. Three bronze plugs are cemented into the masonry or brickwork, so that measurements over these plugs can be made with great accuracy. The plugs are set at the angles of a right-angled triangle with sides vertical, horizontal and diagonal. The line of the crack should lie approximately across the centres of the horizontal and diagonal sides. (See diagram.) The plugs may be made of ¼ in. dia. round material, and each should have a smoothly turned barrel-shaped end against which the measuring gauge is applied. The advantage of the method is that changes of as little as 1/1,000 in. can be measured, and the extent and direction in which the masonry on one side of the crack moves with respect to the other can be definitely established. When a gaping crack has been under the anxious observation of a vicar and churchwardens who have decided on a large increase, it is useful to be able to assure them that in the last three months the crack has closed by, say, 3/1,000 in.


H
V
D
By setting off magnified dimensions thus the amount and direction of movement x100 is shown
In putting in plugs it is preferable to have the vertical or horizontal pair unaffected by crack
Gauge should be held thus against shoulders
Plugs to be fixed in undamaged masonry with neat cement mortar
the longest dimension should not exceed about 5½ inches to be within the compass of 6" vernier gauge
VERNIER GAUGE TO MEASURE TO 1/1000 inch
DETAIL OF PLUG.
Should be of Bronze or Brass
exact dimensions not important
shank not too smooth
RECORD AND EXAMPLE
DATE | H | CHANGE | V | CHANGE | D | CHANGE
July 10 1935 | 4·710" | | 2·823" | | 5·393" |
Oct 20 1936 | 4·716" | +·006" | 2·823" | 0 | 5·397" | +·004"
J.S.Wilson Nov 1940

The use of plugs for measuring movement at cracks.

ACCURATE WALL MEASUREMENTS

For the checking of perpendicularity of walls and columns and for questions of stability, usual methods of plumbing are sufficient, but to detect slight changes over a period, special arrangements have to be made. A method I have developed consists of cementing two bronze plugs into the structure where the plumbing is to be done; the upper one contains a fork in which the plumb line lies and the lower one is shaped so that a small table can be fixed on to it in a truly level position. This table has two raised edges at right angles. The plumbing measurement is carried out by hanging the plumb bob, which should have a fine point, from the upper fork so that the point is just above the measuring table. The distance of the point from the two raised edges of the table can then be measured correctly to within 1/50 in. This is a degree of accuracy quite impossible with the usual methods. The difference over a period of the two measurements made at right angles give the extent and direction in which the inclination of a wall or column is changed.

A plumb measurement on a plumb line 15 to 20 ft. long, accurate and reliable to 1/50 in., provides a very sensitive indication of movement.

With regard to settlement or changes of level the measurement of small movement is difficult, although with special instrumental aid it can be done.

The evidence detected at cracks and in the plumb measurements provides a valuable guide as to repairs and remedial measures to be taken.

RECORDING FAILURE

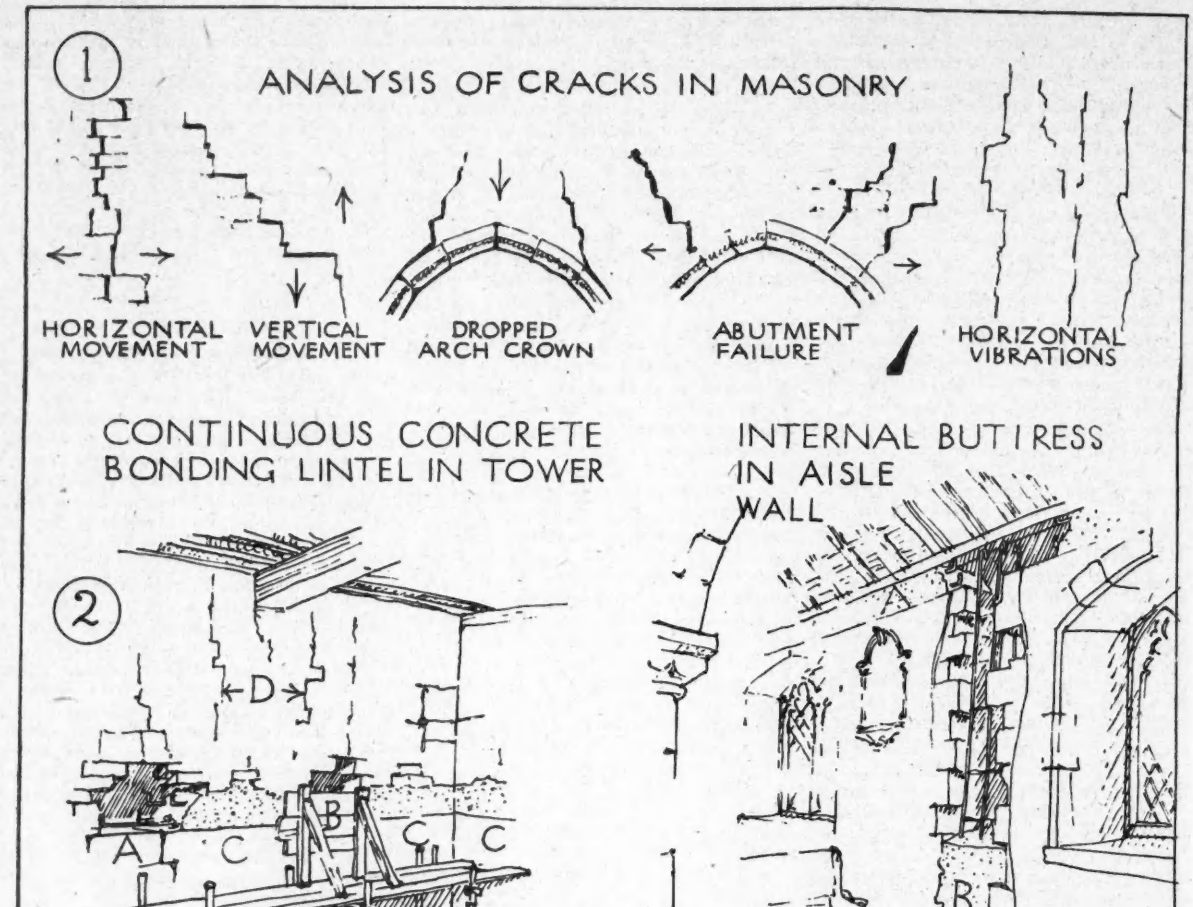
First-Aid Measures and Repair

MR. MACGREGOR gave the final part of the lecture. He said :—

Before considering what form the repairs should take very careful inquiry should be made as to the condition of the structure at the time of survey. The movement may be :—

(*a*) *No longer operative.* It may well be that relatively soon after erection, movement took place, it reached stability and is now of no danger. This may be shown by later works which have been made to conform to the distorted form; for instance, an eighteenth-century box pew scribed to a leaning mediæval pier.

(*b*) *Temporarily quiescent.* A movement may have reached equilibrium but the force causing it may be only latent so that very little is required to reawaken it, while on the other hand stability can be



procured with relative ease. Cracks blackened by age combined with a perilous appearance may indicate such a condition.

(*c*) *Active movement.* This may be shown by clean new cracks, etc.

(*d*) *Imminent failure* may be judged by an obvious condition of unbalanced forces.

It is most important that this condition of failure should be fully studied so that unnecessary work is not undertaken which is not only an extravagance, but may well entail the destruction or mutilation of valuable genuine work.

PREPARATORY WORK

Having analysed the failure and assessed the degree of activity or weakness it may well be that some precautionary work is desirable. If doubt is felt as to whether movement is quiescent or still operative, records should be made by plumbing and tell-tales.

The applied tell-tales such as glass strip, cement patch or sticky paper all trust to adhesion of the applied material to a

plaster face which frequently does not last. The simple pointing up of a crack is often the best and most efficient practice. All such pointing should clearly carry its date.

More scientifically accurate methods such as the inserting of metal pegs with incised crosses on their faces between which variation of the slightest fraction of an inch can be read may be employed, as previously described.

Before commencing structural repair work consideration must be given to ensuring stability (*a*) while the work is in progress, (*b*) to preserve the present condition until such work can be put in hand. As such works are of their very nature only transitory they should be kept to the minimum consistent with efficiency. The common raking shore is too well known to need explaining here. It is a clumsy and not very efficient method and frequently a more direct system may be devised.

Operational shoring was well met by A. R. Powys at Raglan Castle where perilous fragmentary walls were tied together with a well triangulated wooden frame, some 60 ft. above ground.

Simple shoring for postponed work was employed at the Garrison House, Wivenhoe, where the S.P.A.B. paid for the tying back of a wall plate which saved the building from collapse for some ten years until the recent reconditioning. The simple crossing tie rods as employed by Mr. William Weir at Bromley bombed church tower is another good example.

On occasions operational shoring may be used also as a cradle in which to move a mass of masonry back to its original position, as for instance the south wall of Newtown Old Town Hall or the oriel window arch at Raglan.

STRUCTURAL REPAIRS

I have already referred to the various forms of structural failure in a masonry wall and the diagnosis of such failure, and propose now to turn to their remedies and to discuss these in the same sequence used previously.

(*a*) and (*b*). The practice of underpinning is generally well understood and for brevity may be passed over here. An alternative which may on occasions be employed is the insertion of a concrete band above ground which collects and redistributes the load. This is carried out by removing small portions of masonry, say 3 ft. long and 1 ft. 6 in. wide and 1 ft. 6 in. high. A mass of concrete is poured in behind a rough shuttering in which iron reinforcing rods are set with hooked ends projecting so that when set the next portion can be cut out and dealt with in a similar manner, the rods being hooked together to form continuous tensile members.

When it is reasonable to suppose that the major movement has taken place the masonry on either side of the fracture may be firmly banded together by either the insertion of concrete ties formed as just described at various levels or the crack can be bonded its whole height by cutting out and building up in mass concrete extending first this way and then that to ensure perfect bond to both sides.

It is usually best to do this work from the inside of a wall working right through to the outer facing stones so that when the internal plaster is made good no visible trace of the work is left.

Before the insertion of the concrete the cavity in the wall should be well wetted, and if there are fissures they should be grouted up. The concrete used for this work should be of fairly extensive bulk and of fairly weak mixture varying from 6 to 10 to 1 according to circumstances.

(*c*) Where horizontal movement is met it may be countered by: (1) Providing horizontal ties in the form of reinforced beams, as just described, or surrounding ties, possibly of steel rods prestressed and embedded in concrete, or (2) by frankly making definite allowance for future movement by providing expansion joints at convenient points so that a chancel may, for instance, be allowed to move freely to and from the nave.

(*d*) The most common method of stabilising an outward leaning wall is by the addition of an external buttress. There are two disadvantages to this, however. The first is the disfigurement of old structure and the second, the fact that the buttress is itself standing on the soil subject to moisture variation. Such buttresses are frequently found to have dropped away from the wall they were supposed to abut or even worse pulled it over with them. In certain cases a better solution is the insertion of an internal buttress of reinforced concrete. This is particularly effective where the toe of the buttress can be caught beneath a weight bearer such as an arcade pier. This was done satisfactorily at Castle Hedingham and Ivinghoe Church.

A westward leaning tower will often be found to have gone over as a single mass so that although the west wall may overhang 2 or 3 ft. there is no question of instability. To underpin such a tower would be an exceedingly expensive matter and if done it is questionable whether the bearing would be as good as the soil which has been compressed for centuries. In such a case it is far better to ensure that in any future movement the tower moves as a whole but to dissociate it from the rest of the church. At Puttenham this device was satisfactorily employed.

(*e*) Arch thrust is also commonly resisted by extraneous buttresses, but again the insertion of a concrete tie above the arch may well be more efficient and inconspicuous. In a similar way the spreading thrust from a spire can be resisted by inserting a reinforced concrete band at the base, as at Poddington Church in Bedfordshire.

(*f*) The failure of a crushing core can usually be overcome by either grouting or replacement with concrete.

(*g*) The vertical cracks caused by ringing bells can be remedied by concrete bonding or stitching, but a continuous concrete band may often meet the case as at Ivinghoe where the weather-cock ceased to sway after the treatment.

(*h*) The effect of "drift" may be so varied that the remedy must be considered in each individual case.

As explained by Mr. Wilson, the masonry of curved bays is often expanded by the action of "drift." The same principles can be applied to the repair of similar defects in flint and brickwork.

IN PARLIAMENT

Ministry of Works' Programme

BEFORE Parliament adjourned for the Whitsun recess, Mr. C. I. Orr-Ewing, on May 30, asked the Minister of Works what proportion of the building programme at the present time was being carried out for or by his Department.

Mr. Eccles said that the new building and maintenance charged to the votes for which he was responsible represented about 1¼ per cent. of total building investment. Work representing about a further 2 per cent. of total building investment was carried out by his Department as a charge to the votes of other Government Departments. In addition, investments in offices which were being erected by private developers for lease to his Department amounted at present to less than 0.1 per cent. of total building investment.

Life of Prefabricated Houses

On May 27, AIR-COMMODORE HARVEY asked the Minister of Housing and Local Government if he would make a statement on how the prefabricated houses built just after the war were standing up to climatic conditions; and what was their estimated life.

MR. MARPLES said that generally the temporary bungalows were standing up to climatic conditions satisfactorily. It was not possible to estimate their life with any precision. If properly maintained they would be fit for occupation for a considerable time.

New Streets Act, 1951

On May 27, MR. ALPORT asked the Minister of Housing and Local Government whether he was aware of the difficulties facing private builders on account of the requirement of the New Streets Act, 1951, to deposit with the council concerned a sum of money against the estimated cost of adequate road construction; and whether he would assist the firms concerned to meet this obligation.

MR. MARPLES said that the Minister was aware of the obligations imposed by the Act. He was looking into the problem of how they might be met in the least onerous way.

Houses Derequisitioned

On May 27, in reply to MR. GIBSON, the Parliamentary Secretary to the Minister of Housing, MR. MARPLES, said that 1,446 houses and flats were released from requisitioning between January 1 and April 30, 1952, as compared with 1,220 for the same period last year. Houses which were derequisitioned remained available for occupation. Where a local authority desired to retain control for the discharge of their housing duties it was open to them to make use of their powers for acquisition under the Housing Acts.

Improvement Grants

On May 27, MR. OLIVER asked the Minister of Housing and Local Government whether he could give the number of successful applications to local authorities for improvement grants under Section 20 of the Housing Act, 1949.

MR. MARPLES, who replied, said the figure was 1,610 up to March 31 last.

BOOKS

ARCHITECTURE AS A CAREER. By Maurice E. Taylor, A.R.I.B.A. Pp. 178. Published by Iliffe and Sons, Ltd., for *The Architect and Building News*. Price 10s. 6d.

THE PURPOSE of this sensible and lively little book is to tell an intending architectural student how to set about qualifying himself, and then how to launch himself into employment. The author compares the two systems of training: either in a "recognised" school of architecture, or by means of private study, supplemented by coaching or by evening classes, during pupilage. Having traversed the latter road himself, he admits that it is "the hard way," though inevitable for many students; but he points out that all the advantages do not lie with the schools.

There is hardly anything in the book that invites contradiction, but it contains many things that are well worth saying by a man who can view the whole position thoughtfully and impartially. His detailed description of the new R.I.B.A. requirements for Testimonies of Study shows how completely conditions have changed in the past year or so. His cautious defence and criticism of correspondence courses is realistic; and his remarks on the temptation offered to lazy students by the R.I.B.A. Special Final are worth noting.

He confesses to some sympathy with the "traditionalists," having really enjoyed making measured drawings in his youth, and he regards such work as an indispensable part of the curriculum. He is very helpful in his advice on relations with clients, on applying for salaried posts, on the relative attractions of official appointments and private practice, on competitions, on filing systems and on the proper use of technical journals. He tells us why the Owen Jones Studentship is unpopular, why external students shun the big design prizes, what sort of drawings a client can really understand, and why one obtains better experience in a small private office than in a large and famous one.

Throughout the book, although it is crammed with useful facts, he interpolates his own or his friends' personal experiences —all very human and understanding.

M. S. B.

THE CINQUE PORTS. By R. F. and F. W. Jessup. With a Foreword by Elizabeth Bowen. (London: B. T. Batsford, Ltd.) Price 9s. 6d. net.

EVERYONE has heard of the Cinque Ports, but it is doubtful whether more than a few could name them correctly or specify the two Ancient Towns, much less give a list of the Corporate and the Non-Corporate members or explain how this unique confederation came into being and got its honours and privileges. This little book explains it all, describes the rise of the Cinque Ports as a result of ship-service in peace and war, and their decline with a changing coastline that left only one of the five—Dover—functioning as a port.

The book is at once an historical and topographical record and an evocation of the enduring spirit of an area that has had intimate contacts with the Continent for two thousand years. Hastings, Dover, Sandwich, Romney, Hythe, Winchelsea and Rye, each has its chapter of record and appreciation, while the architectural and landscape beauties of the area are well conveyed in over 50 excellent photographic and other illustrations. G. J. H.

THE FACE OF ULSTER. By Denis O'D. Hanna. Pp. viii, 136. Illustrated. (London: B. T. Batsford, Ltd.) 15s. net.

THE TITLE of this, the twentieth volume in *The Face of Britain* series, is significant, for the author has elected to deal with the whole historic province of Ulster as it was constituted up to 30 years ago, not confining himself to the six counties that make up "Northern Ireland" today. Thus the three counties of Monaghan, Cavan and Donegal are allotted a brief chapter in this book, though they now form a part of the Republic of Eire.

The author is an architect with an extensive knowledge of the region, and provides a long chapter on Ulster architecture in which the nature of "Planters' Gothic" is explained. The principal monuments are then mentioned county by county. There are very few medieval examples, which makes it the more regrettable that so little is said about Killyleagh Castle, which has "all the qualities of a dream castle." Secular buildings of the eighteenth century are more numerous and are well described.

Among modern buildings, St. Anne's Cathedral at Belfast and the Parliament House at Stormont should surely have been illustrated. Mr. Hanna writes kindly of the City Hall at Belfast which, to his mind, "has received far too much adverse criticism. In a world where so much architecture is stark and unhumoured functionalism, it is pleasant to meet a design which is not afraid to smile." Besides buildings, the history, archæology, climate and scenery of Ulster are pleasantly and informatively treated. It is refreshing to find a really frank opinion on the Giant's Causeway (most inadequately illustrated here by a feeble woodcut): "Unusual it certainly is, majestic in scale, worth a visit undoubtedly, but it is the landscape of Doré's Dante's 'Inferno.' It is too much of a nightmare to be called beautiful." The book is generously and attractively illustrated. M. S. B.

WESTMINSTER ABBEY: ITS WORSHIP AND ORNAMENTS. VOL III. By the Rev. Jocelyn Perkins. Pp. xii. 239 illustrated. (Oxford University Press.) Price 35s. net. (Alcuin Club Collections, No. XXXVIII.)

WITH THIS THIRD VOLUME, Dr. Perkins completes his task after a long interval, for the second volume appeared in 1940. As he remarked at the outset, so much has been written about the Abbey that a new book on this scale seemed superfluous at first sight, till one remembers that the great Inventory forming the first "London" volume of the Royal Commission on Historical Monuments, published in 1924, was solely concerned with visible and surviving things and, moreover, with nothing later in date than 1714. As an accurate description within those limits it is admirable, but it tells us nothing of what has disappeared, or of what has been added since 1714). The title of Dr. Perkins' trilogy explains and justifies his purpose; he is concerned to describe the conduct of worship and the "*instrumenta* of worship" all through the centuries. As Sacrist of the Abbey, he is naturally interested in vestments, plate, details of ceremonial and liturgy and ritual that lie outside the field of architecture, as well as with the architectural history of each chapel and corner of our most famous English church.

The present volume begins with the last section of elaborate survey of the whole buildings, and covers the 11 eastern chapels. Then comes an interesting chapter on the "furniture" of the Abbey: pulpits, font, litany stools, lecterns, gates, pavements; and then another chapter on the "*ornamenta*": plate, maces, and fabrics. The second and slightly longer half of the book consists of a history of the condition, repair, restoration, neglect, ritual and ceremonial use of the Abbey from 1560 to 1950. This section is most valuable as a supplement to the R. C. H. M. Inventory, for reasons stated above, and is most interesting reading in itself.

In many respects it is a sad story of architectural vandalism as well as of ecclesiastical neglect. The problem of the vast and bombastic monuments in the north transept, fully grasped by John Carter in his slashing criticisms in the *Gentleman's Magazine* in 1799, is honestly described, and there is some account of the amazing and unruly midnight or "torchlight" burials of that period. Little is said about the fierce iconoclasm of the period 1540-60, but there are some bitter references to the period of "Puritanism Rampant" from 1640 to 1660. There was another period of neglect from George III up to Queen Victoria's accession, since when the author records steady progress in the maintenance of the fabric as well as in the dignity and beauty of worship and its accessories. It is startling to learn that the first heating-apparatus was installed less than a century ago, though at that time services might last two hours and sermons an hour and a half. Sir Gilbert Scott is treated with respect by the author, and full justice is done to Scott's successors. M. S. B.

ARCHITECTURE: FIVE THOUSAND YEARS OF BUILDING. By Joseph Watterson. (London: George Allen and Unwin.) Price 45s. net.

THIS IS a popular history of the architecture of the Mediterranean area, of Western Europe and North America, written by an American, first published in the United States, and now available in this country through an English publisher. It is a far cry from the Sphinx to Frank Lloyd Wright, but the author tells the story of architectural development through the centuries between, not merely in clear outline but with a remarkable amount of detail. To British architects (who are probably surfeited with the historical styles) the most interesting part of the book will be the section dealing with the architecture of the United States, from the Colonial period to the present day. This occupies about one-third of the book and is most interesting and informative within popular limits. The book is well illustrated throughout with plans, sketches and photographs. The English section, as one would expect, is adequate in both text and illustrations. The only slip we have noticed is the statement that St. Stephen's, Walbrook, was "completely destroyed." G. J. H.

DOMESTIC WATER HEATING: Basic Engineering Principles of Electric, Solid Fuel and Gas-Fired Installations. By Ronald Grierson, M.I.E.E., M.I.Mech.E. (Iliffe and Sons. Ltd.) Price 25s. net.

BESIDES SETTING OUT the principles of the subject, this books gives a critical analysis of current practice in the supply of hot water for domestic purposes. The increasing cost of, and enormous demand for, new housing have made the time opportune for such an investigation, for it is generally conceded that the standard of efficiency and running costs of many present-day household installations leave much to be desired.

The only remedy for their deficiencies lies in the application of sound engineering principles, and these the author has applied

to the design of water-heating plants of the solid fuel/electric type.

The book deals mainly with the combination of an electric immersion heater and thermostat with a conventional hot-water storage tank, in conjunction with a coal- or coke-fired domestic water heater, this being arranged either as a "back-boiler" or as an independent unit.

BUILDING INSULATION. By Paul D. Close. (London: Technical Press, Ltd.) Price 40s. net.

THE FOURTH EDITION of this book on the principles and application of heat and sound insulation for buildings introduces new practices and procedures which have been developed. Features of previous editions, including the numerous illustrations, the emphasis on practical applications, and the various technical explanations, have been retained. A brief history of the development of commercial insulations is given, together with information regarding the various types of insulation now in use, as well as the trade names and descriptive data of specific products. The theory of thermal insulation and the economics thereof, beginning with the fundamentals of heat transfer, is treated as an introductory subject to the study of heat-loss coefficients of insulating and building materials, and compound wall and roof structures. The practical application of these coefficients is illustrated in Chapter VI. The last part of the book deals with architectural acoustics and insulating farm structures.

THE RESISTANCE OF PILES TO PENETRATION. By R. V. Allin. (London: E. and F. N. Spon, Ltd.) Price 21s. net.

THE SECOND EDITION of this book has been extended by the author through the addition of a chapter on the reactions of various types of soil to the penetration of piles both during and after driving operations, and other important features of the bearing resistance of piles from the aspect of soil mechanics. Although primarily written to facilitate the use of Hiley's pile-driving formula, this book affords useful guidance to contractors in connection with the purchase and operation of piling plant.

BUILDING AND CIVIL ENGINEERING PLANT. By Spence Geddes. (London: Crosby Lockwood and Son, Ltd.) Price 30s. net.

THE PURCHASE and use of building and civil engineering plant require a sound knowledge of the various types and sizes of plant available and their performance, with the economic and practical issues involved being taken into consideration. The author has compiled a comprehensive book of reference on plant so as to make possible a considered approach to its purchase, and to ensure its correct application and efficient operation in carrying out the work. Each section of the book deals with a specific type of plant, discussing its constructional features, application, operation, output and the apportionment of labour to the plant required. These sections are preceded by details on the general aspect of operations on which plant can be employed.

FOUNDATIONS FOR HOUSES AND OTHER SMALL STRUCTURES. By W. H. Elgar. (London: The Architectural Press.) Price 12s. 6d. net.

THIS LITTLE BOOK is intended to set out the general principles which govern the behaviour of subsoils and foundations. All the examples of such conditions and buildings mentioned have come within the author's personal experience in one form or another. The book describes the method of arriving at an adequate and safe foundation design in relation to the various types of soil and subsoil that are likely to be encountered. It goes on to show how to avoid unnecessary extravagance and the waste of money below ground level which is sometimes mistakenly excused on the basis of "safety" reasons.

CARPENTRY AND JOINERY (INTERMEDIATE). Edited by A. E. Bridgwood. (London: George Newnes, Ltd.) Price 35s. net.

THE SUBJECT MATTER of this book covers the syllabus for the Intermediate Examination in Carpentry and Joinery of the City and Guilds of London Institute. It is intended as a practical work on carpentry and joinery, and as such will be found of use not only to the apprentice and student but also to craftsmen in the shop and on the building site. The practical aspect of the work has been kept well to the fore, and numerous photographs of work actually in progress are shown throughout the book. These include photographs of work being undertaken by hand and machine in the shop, and also in the course of erection on the site. Taken in conjunction with the relevant text, these photographs will give the reader a clear impression of the work described. The maintenance and upkeep of both hand and machine tools are illustrated in a similar manner. The last chapter deals with the various Building Acts as they affect the carpenter and joiner.

PLASTICS PROGRESS. Edited by Phillip Morgan. (London: Iliffe and Sons, Ltd.) Price 50s. net.

THIS BOOK, which is a collection of papers and discussions at the British Plastics Convention held in 1951, reviews recent developments in the technology of plastics and their importance in various industrial and other non-consumer applications. The importance of plastics in these applications is discussed in a paper on "The Place of Plastics in Industry," by Sir Ben Lockspeiser, F.R.S. Advances in plastics technology are described in papers devoted to progress in plastics materials; vinyl formulation and compounding; true synthetic fibres; developments in synthetic resins; techniques of fabrication; and developments in processing plant. The aspect of the buying and selling of plastics is also considered.

BOOKS RECEIVED

HANDBOOK OF HEATING, VENTILATING AND AIR CONDITIONING. By John Porges. (London: George Newnes, Ltd.) Price 25s. net.

LAW OF EASEMENTS. By S. L. Newcombe. (London: The Estates Gazette, Ltd.) Price 27s. 6d. net.

TIMBER DRYING. By R. G. Bateson. (London: Crosby Lockwood and Son, Ltd.) Price 15s. net.

THE LAW RELATING TO THE ARCHITECT. By E. J. Rimmer. (London: Stevens and Sons, Ltd.) Price 35s. net.

*** *Books reviewed in these columns may be obtained on application to the Book Centre, "The Builder," 4, Catherine-street, Aldwych, W.C.2. Cash (which should include 6d. to cover postage and packing) should accompany the order.*

SOCIETIES AND INSTITUTIONS

R.I.B.A.

Intermediate Design Prize Competition

IN the United Kingdom 400 competitors took part in the Intermediate Design Prize competition and the following have been selected to proceed with the final drawings for the competition:—

D. S. Appleyard (Northern Polytechnic), J. W. Cooper (University of Sheffield), G. B. Gray (Edinburgh College of Art), R. Latham (Victoria University, Manchester), R. B. Lord (Victoria University, Manchester), P. H. Meecham (Victoria University, Manchester), J. M. Moore (Polytechnic, Regent-street, London), M. E. Rutledge (Polytechnic, Regent-street), R. Tree (Brighton College of Art and Crafts), J. Wells-Thorpe (Brighton College of Art and Crafts).

Victory Scholarship

In the United Kingdom 156 competitors took part in the Victory Scholarship competition and the following have been selected to proceed with the final drawings for the competition:—

C. Bramwell (King's College, Newcastle-on-Tyne), F. H. Brown (Polytechnic, Regent-street, London), R. W. Brunskill (Victoria University, Manchester), R. Clementson (King's College, Newcastle-on-Tyne), H. E. M. Dobson (King's College, Newcastle-on-Tyne) M. C. Edwards (University of Sheffield), I. M. Samuel (Edinburgh College of Art).

West Yorkshire Society of Architects

Earl of Harewood an Honorary Member

THE EARL OF HAREWOOD has accepted an invitation to become an honorary member of the West Yorkshire Society of Architects. The new president of the Society is Mr. Noel Pyman, F.R.I.B.A.

Hampshire and Isle of Wight A.A.

Election of Office Holders

AT THE BIENNIAL MEETING of the Hampshire and Isle of Wight Architectural Association, held at Southampton recently, the following officers for the session 1952-1953 were elected:—

President, Mr. Gordon Sutcliffe, A.R.I.B.A.; *vice-presidents*, Mr. A. E. Green, F.R.I.B.A., and Col. R. F. Gutteridge, F.R.I.B.A. The chairmen of the chapters, who are also vice-presidents, were elected as follows: Mr. John Brandt, F.R.I.B.A. (*Central*), Mr. K. P. Dexter, A.R.I.B.A. (*Western*), Mr. A. C. Townsend, F.R.I.B.A. (*Eastern*), and Mr. F. H. Booth, A.R.I.B.A. (*Isle of Wight*).

R.I.C.S.

Election of the Quantity Surveyors' Committee

UNDER the byelaws of the Royal Institution of Chartered Surveyors, half the members of the Quantity Surveyors' Committee retire annually, but may offer themselves for re-election. The ballot for the election of the committee for the session 1952/1953 has resulted in the election of the following:—

Metropolitan Section.—Messrs. H. A. Ackland, O.B.E., F.R.I.C.S., R. H. Francis, F.R.I.C.S., E. W. Leaning, F.R.I.C.S., J. R. B. Mann, F.R.I.C.S., C. Sweett, F.R.I.C.S., and A. J. Willis, F.R.I.C.S.

Provincial Section.—Messrs. D. J. Bendle, F.R.I.C.S., K. K. Dale, F.R.I.C.S., J. R. Furbur, F.R.I.C.S., T. C. Hill, F.R.I.C.S., and Colonel J. B. Marks, O.B.E., F.R.I.C.S.

Professional Associate over the Junior Age Limit.—Mr. W. D. Bristow, A.R.I.C.S.

Junior Quantity Surveyor.—Mr. F. S. Johnstone, A.R.I.C.S.

STRUCTURAL SURVEYING

An Outline of Methods Which Have Proved Their Success

By GORDON TOMALIN, MIStruct.E, FG of S

WITHIN the operations for the production of structures, measurements of the site are needed to varying degrees of accuracy. In the first place the architect will require to know the boundaries within which the structures are to be placed, data of the level of the land and information relating to drainage. In certain cases he may require to know the positions and heights of properties opposite his new building for consideration of light and air.

The importance of the type of survey and the conditions for the positioning of structures varies with each site. In some, structures may be placed in such a position within the boundaries that a high degree of accuracy is unwarranted. On the other hand in most of our towns space is so restricted that buildings are closely related to kerb lines, backs of pavements, buildings on opposite sides of streets, new town planning lines, or various other controls.

In those cases where the structure is to " fit into " the site and the controls are as stated above, the structural engineer must be furnished with accurate dimensions. This especially applies when the skeleton of the structure is to be of steelwork or reinforced concrete. Stanchions, girders, rods, etc., prefabricated off the site essentially call for accurate dimensions. Here one needs the precision survey, one on which all dimensions are measured and shown to the nearest eighth of an inch. The structural engineer should know at the earliest moment all data relating to the size of the structure, interior positioning of pieces, and levels.

INFLUENCE ON PREFABRICATION

Not so very long ago dimensions for portions of structures were " offered." When these parts had been erected " closing " dimensions were taken for the remaining pieces to be made and fitted in on the site. In this modern age the entire structure is made in advance, not only for orderliness of deliveries of pieces to the site, but also so that the contractor may properly organise his part of the building work, constructing foundations, etc., to conform to the delivery and erection programme agreed between the parties.

There is no site the outline of which is so vast or complicated, or within which the obstructions are so many, that the precision surveyor equipped with modern instruments cannot accurately measure. The accuracy of the survey and the manner in which it is produced on paper are vital factors contributing towards the speed at which the structural engineer can provide layout drawings, the detailers work, and the fabrication and erection take place.

ESTIMATING AND SCALING

Estimating by the structural engineer does not necessarily mean that accurate dimensions must be taken or that the precise survey should be available. It is clear, however, that if a precise survey has been carried out and appropriate drawings are available showing all sizes and dimensions, etc., he is able to " take off " the materials within a very narrow margin. " Scaling " from eighth-scale plans often means that lengths are taken on the " long " side, a certain quantity of material, however small, being allowed for which does not arise in the finished structure. " Scaling " may also mean that the margin allowed for will become scrap ends when the true dimensions are known.

With accurate dimensions the structural engineer can not only take off his quantities correctly but order his materials earlier. From his quantity sheets accurate lengths are available for ordering " dead cut " lengths from the rolling mills. Such points may be worthy of consideration when the question of making a precise survey arises.

NEED FOR SIMPLICITY

The structural survey should be carried out so that the absolute minimum of calculation arises for the user. From the surveyor's viewpoint the easiest operation on any survey is to put down survey lines " anywhere " for the location of boundaries and other controls for the new work, showing a variety of skew lines and theodolite angles. This approach may look very clever for it is a picture of imposing complexity. The truth is that the structural survey, when presented simply and clearly, with lines parallel to new working lines, and all dimensions and lines at 90 deg., offers scope for artistry and ingenuity on the part of the surveyor. Everyone concerned in the work of construction knows this need for simplicity. The architect is not pleased to be presented with the complex, the structural engineer cannot afford it, and the man who has to build on the site has no time for it.

" Near enough " is never good enough when measuring for a precise survey. Approximations to the nearest half-inch may be all very well for the preparation of architects' eighth-scale drawings, but the actual operations of construction, within confined boundaries, calls for precise dimensions and someone must get them.

EQUIPMENT REQUIRED

It may be of some interest to the structural surveyor, and others, to know of the variety of implements, equipment, etc., that are carried by the land and precision surveyor who is prepared to carry out survey work on any site in the country. In looking over this list one should bear in mind that when being instructed to make the survey the surveyor would have little information either about the site or of any aid that might be available to him there. He must be ready for all exigencies, for without the right piece of equipment time is lost. Time means money, and the matter of the cost of the survey is of importance to the party paying for it, and the final cost of the job.

Too much thought cannot be given to this matter of going to a site adequately equipped for the survey work. It is not suggested that any one particular survey requires the use of all the items shown, or that these are essential for all structural surveys.

The equipment carried by the survey unit is as follows :

1. A theodolite, with tripod.
2. A Quickset Dumpy level, with tripod. It is possible, of course, to have a universal tripod to fit both instruments.
3. A staff.
4. Preferably a dozen ranging rods.
5. A chain, 100 ft.
6. 1 white steel tape, 100 ft. long, or shorter.
7. 1 ordinary steel tape, heavy type, 100 ft. long.
8. A steel band, 100 ft. is sometimes useful, but one can get by with tapes.
9. A small quantity of timber pegs, say, six 2½ in. x 2½ in. x 2 ft. 6 in.
10. A 14-lb. hammer.
11. A claw hand hammer.
12. A set of three chisels.
13. A tape repairing outfit.
14. 2 portable collapsible stands for ranging rods and/or " red " flag during street operations.
15. A quantity of brass studs.
16. Nails, 2-in. long or near.
17. Small quantity of ⅜-in. or ½-in. dia. by 2-in. long bolts without nuts, for driving into roads, and/or small quantity of 2-in. raised round-headed nails (galvanised).
18. A short length of cod line, thin, for " snapping " down chalked string lines on smooth surfaces.
19. A quantity of chalk, tin of white paint, brush.
20. A lightweight 16-ft. folding ladder.
21. Clothing, such as gum boots, donkey jackets, overall rubber trousers.
22. A precision compass.

Such a list at first glance may look formidable. Yet there is wisdom gained from experience in the carriage also of a spare tape, an axe, a bill-hook, a sickle. The latter items for clearing scrub or removing small pieces of hedge fouling a survey line, for clearing woods, etc. This equipment allows for complete independance and rapid operation.

THE THEODOLITE

Item 1, the theodolite, is necessary for angle work. This instrument can also be used in a variety of ways for " lining " purposes in setting out on the site. In selecting one for structural surveying alone, and for its usefulness on sites, the suggestion is to seek a simple operating type, avoiding the additional mechanisms invaluable for certain other forms of surveying. Simplicity in the instrument is important not only in considering cost but in the fact that all and sundry may be using it. Repair costs would be less than for the most modern instrument with its variety of important additional parts.

The reason for the inclusion of the Quickset Dumpy level is that it is lighter to carry and operate, and speedier for levelling work generally. Also, in certain surveys one can so organise the work that two parties may work the two instruments at the same time. The staff is obviously necessary although it is not certain to the writer that the Sopwith is always best. The Gayer staff, used during many years of experience, has been found a type simple to read, and perhaps more important, it offers less likelihood of being read incorrectly. A further good point is that it is light to carry, a man can sling it over the shoulder and have hands free for other things. Unfortunately, this type of staff is

believed to be out of production. It has to be seen, and used, to be appreciated.

On ranging rods, these apply mostly to field work, although they can be most useful for roughly lining out during experiments prior to the laying down of final survey lines. The chain, too, is more a field measuring appliance.

The white steel tape is a boon. Its advantage is that one can see the figures clearly through the telescope of the theodolite and read dimensions from points. The distance one can sight and read naturally depends upon the type of telescope on the instrument. Much time has been saved in reading off-set dimensions when using this type of tape.

The ordinary steel tape one generally uses for measuring between points. A disadvantage with this tape is that it needs a lot of attention in cleaning and preserving. Bad weather penetrates the oil protection and rusting commences. The stainless steel tape has its uses, but tends to stretch. For cleaning the white tape a damp cloth only is required; weather conditions do not affect the surface. Care must, however, be observed, for the white coating and figuring will not stand rough usage.

Timber pegs are always useful on any site. They can be used for the marking position of an intersection of survey lines or for boundary markings, grid line controls, etc. The heavy hammer is for driving them.

A UNIVERSAL TOOL

The hand, or claw hammer, is one of those universal tools. Boarded fences often have to be temporarily removed, nails drawn, and boards replaced after work. It is also used for driving bolts, studs, and nails, at the intersection points of lines on certain types of surface. The chisels would be used for marking such lines in the form of a cross on the harder surfaces. The sharper the chisels the better the line produced. Chisel cuts one can float a boat in are of little use to anyone, especially the setter-out working to eighths of an inch.

The tape repairing outfit is one of those tools the wise surveyor will carry. It is a simple device in the form of a pair fo dual purpose pliers which punches holes or turns down copper rivets. A repair with these tools takes seconds. Broken tapes without a repair outfit, or a spare, usually mean work stops or the adoption of a manœuvre likely to lead to errors.

The length of cod line is as stated, useful for snapping down a chalked line of short dimension when arriving at the true intersection of two survey lines on any hard smooth surface. The ladder has a variety of uses. Climbing over hoardings and other obstructions is made easy and safe. One can also take plumbings of walls to certain heights. Other items on the list have obvious explanations.

Some two dozen items seems a great deal to carry. Yet, when studied, those whose job it has been to operate varied surveys in lonely places will readily agree to their inclusion. They will know the time they have lost and, indeed, the hardship suffered through being ill-equipped.

A SMALL SURVEY

To bring out the suggestions for simplicity and usefulness the following small survey is presented. Here it is presumed that the architect has instructed that the new building line of the structure is to be a line between the two first-floor wall faces of the adjoining buildings. The general conditions of the site are shown in Fig. 1. On the frontage there are two broken plinths with portions of their piers still remaining, the adjoining property lines, party wall or joint lines on the front, adjoining property side wall faces, and a rear garden wall. It may be as well to start with a hint on signalling.

The importance of clear signalling cannot be over emphasised. Even at short distances signals should be similar to those one would make to a man who is half a mile away from the instrument. The standard method of signalling is that when a point being taken by the chainman is dead on line with the instrument the two arms are held upwards to form a clear "V" with the body. If the point is not on line the arm for the direction of movement concerned is held out, slightly upward, and remains in that position until the marker is near the line. At this point the arm is rapidly withdrawn. Then, by quick flicks of the arm in the appropriate direction the point is moved to "dead on line." Waggling of arms becomes impossible to decipher at distances. Should the distance of the marker be so far from the instrument that it is clear to the operator the man does not understand, a white handkerchief held in the signalling hand will help.

It should be remembered that efficiency in signalling is helpful to the man at the other end. He may be in a precarious position. It conveys, too, a desire for efficiency in him, teaching clarity for the day when it will be his turn to operate the instrument.

MODE OF OPERATION

First find out the shortest focusing distance of the telescope of the theodolite you are using. This is important in deciding the position of the survey line which it is intended shall be parallel to the new building line. Reference to Fig. 1 will show that in this case 10 ft.

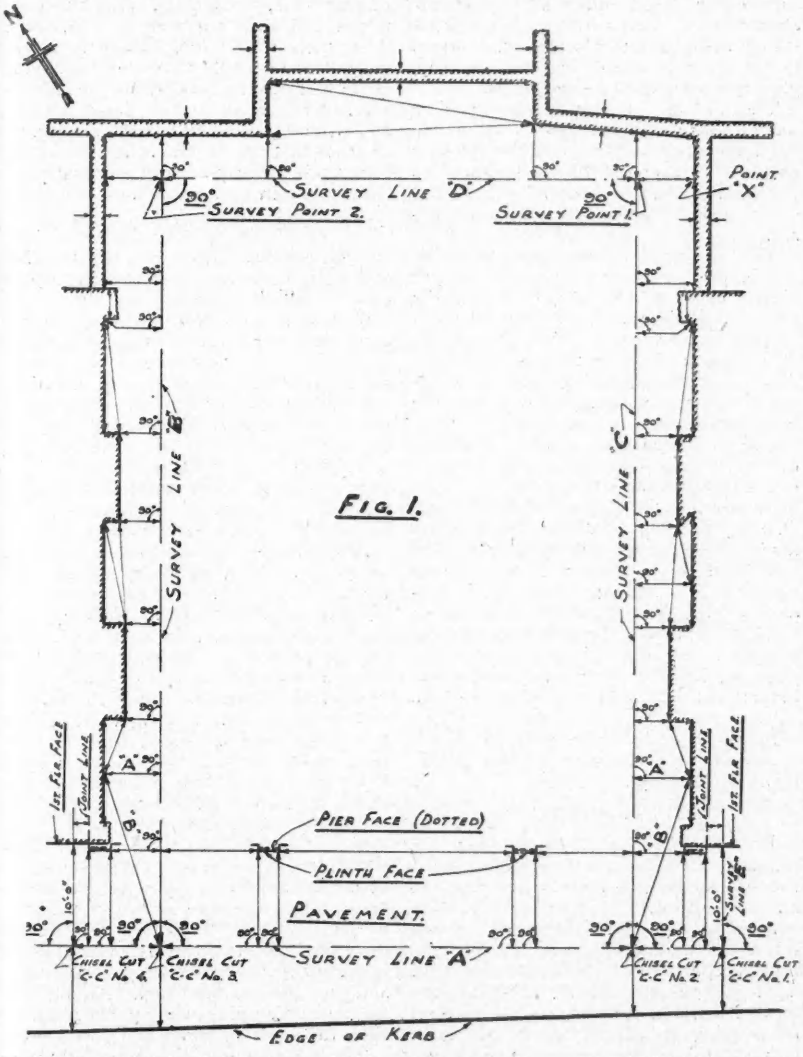


Fig. 1.—Showing the method of carrying out the small structural survey described by Mr. Tomalin.

parallel has been selected. The point here is that when one wishes to obtain the position of the joint lines at the first-floor level on the frontage, standing the instrument on chisel cuts " C.C.1 " and " C.C.4," one should be able to read a 2 ft. rule through the elevated telescope of the theodolite.

By plumbing down from the first-floor face of the one adjoining property and then measuring out the accommodating dimension to a point, a spot reasonably at right-angles to the new building line, and at 10 ft. from it, can be made. " Reasonably " is the right word for by this method one cannot be certain that the spot is strictly correct. Set the theodolite over this spot, however, and instruct the assistant to proceed to the opposite end of the frontage and, from his perch on the ladder, hold out the staff at right angles to the first-floor face at that end. (Note the value of the lighter staff.) He should then swing the staff gently in an arc.

Through the correctly set - up - and-clamped-off instrument sight the staff and set the vertical line in the telescope on the exact 10 ft. mark. What you are actually doing here is, of course, striking an arc to the circle formed by the moving staff. According to distance this may be taken as at 90 deg. to your instrument line, survey line " A," to the point on the first-floor face.

SURVEY LINE "A"

Having obtained survey line " A " on the instrument the next move is to set down on the pavement at that end a point on the line for work there. This point will be chisel cut " C.C.1 " or " C.C.4 " according to the end being worked upon. Presume it is " C.C.4."

Chisel cut " C.C.1 " has not yet been made for you have here a temporary set-up point for the purpose of getting down survey line "A." It is very important, therefore, to set the instrument on " C.C.4 " and, by adopting precisely the same actions with your assistant holding the staff at the first-floor face point concerned, check the original spot and adjust to 10 ft. as necessary. Chisel cut " C.C.1" may now be made.

The base line for the control of the survey is now established, survey line " A." A careful inspection should now be made of the two side walls of the adjoining properties to ascertain how close one can " throw " a 90-deg. line in the site alongside them. Reference to Fig. 1 will show you are seeking the points " C.C.2 " and " C.C.3 " to be marked on the pavement along survey line " A." Having made temporary marks on these points there is wisdom in fixing the dimension between them, to even feet. This dimension will form one side of the rectangular survey " box " enclosed by survey lines " A," " B," " C," and " D." Take the closing dimensions to " C.C.1 " and " C.C.2 " to complete the data on survey line " A " so far fixed.

A warning might be given at this stage. Never be in a hurry to move the instrument from a point until you are certain you have used it to it :maximum. For example, although the first survey line is established and chisel cuts made for the survey there is still the location of the whole of the frontage plinths, etc., to be carried out. First, it is necessary always to work on the assumption that the pavement on which you have marked the four chisel cuts will not be there for long once construction commences. If that principle be accepted the marking of appropriate " trap " points inevitably becomes habitual.

AVOID LOSING CONTROL

In this small survey it is necessary to take the precaution of avoiding loss of control. Indeed, one finds it necessary in all similar types of survey. The practical side of construction work shows lorries backing on to pavements, unloading materials there, or, the pavement may be deliberately taken up to enable and facilitate retaining wall construction. It may become damaged or moved in some way. A good phrase for the memory is to repeat to oneself " this pavement will not be here when I come back."

The obvious precautionary measure to take is to " shoot " to a point some 30 ft. on either side of the site, the line on which your instrument stands, viz., survey line " A," and make chisel cuts at both ends. Rest not, however, without taking further diagonal location dimensions trapping these chisel cuts from, say, plinth corners or other firm points.

The reason for this is that paviors sometimes remove the slab on which the cut is made, or turn it round the opposite way. The latter can be most dangerous and a check of the " trap " dimensions before again using the cuts is most important.

The structural surveyor adopting this simple precautionary measure is forever blessed by all who are responsible for the accuracy of the position of the structure.

The locations and offset dimensions of the whole of the frontage are to be set down. Normally, during ordinary working hours the pavements in towns are used by pedestrians and one finds them unwittingly appearing to slow-walk when dimensions are being taken. Quick means of reading off-set dimensions from points to survey line " A " have to be devised. One will find here the value of the white tape. With the eye glued to the telescope and lined on to the point at which the assistants are holding the tape it is surprising how, as they swing the tape in an arc, it can be read through so many feet and legs. Of course, it requires a certain patience, but the work can proceed and dimensions be taken accurately in this way.

As dimensions are now being taken this seems the right moment to look at the method of booking.

QUICK BOOKING

It may be as well to dwell upon the number of movements one could take if each dimension measured by one man and an assistant was (*a*) read, (*b*) the tape wound up, (*c*) the dimension booked down on the survey sheet, (*d*) the tape unwound, and so on. On extensive work on frontages and the like booking can mean many hours of labour. A method of booking is offered which has been found most satisfactory over many years. First, the points, be they corners of plinths, piers, or walls, should be marked with a small chalk-mark. Inside the site these particular points could be marked with a daub of white paint for future reference : this is to guide the assistant as well as to help the surveyor. If the frontage be lengthy, or people and traffic so noisy that the " called out " dimension read through the instrument cannot be heard, the points should be numbered consecutively from one end of the working. Similar numbers should be entered against the points sketched on the survey sheet.

The position of the instrument, on either " C.C.1," " 2," " 3 " or " 4," enables one to read, through the telescope, the offset dimensions to plinths, etc., on the white tape. Teamwork between the two men holding the white tape and the instrument man is vital. First, the ring end of the tape must be exactly on the point to which the dimension is required. Next, the man holding the box end of the tape must ensure that the tape is tightened and level during the whole of the time that he is swinging an arc. One might have in mind here the work on the drawing-board. The point of a compass, or trammel, is fixed and the pencil end scribes a portion of a circle. The man on the instrument in using his vertical line actually strikes an arc to the circle and at that point reads the dimension. Such a dimension must be the shortest and, being this, is at 90 degrees to the instrument line. A glance at Fig. 1 will show the many off-set dimensions taken in this manner.

MARKING OF POINTS

The practice of consecutive marking of points allows for the assistants to proceed from " 1 " to the end, and the instrument man to book down in schedule form each dimension read. Having completed a run of dimensions these should be transferred to the survey sketch in one operation.

Chalking down of dimensions also saves time in booking. Dimensions can be taken, or read through the instrument, and chalked down in code enabling the surveyor to book down a whole length of work in one move. A method is offered here which should be found helpful.

Assume the first dimension taken to be 9½ in. This, in code, would read 0.9.4. Then, say, a length of 17 ft. 8⅝ in., would be 17.8.5. A little space between the figures, or a dot, will help the inexperienced. This method can be taken a stage further and applied to any figures. For example, such dimensions as 66 ft. 9¼ in., 71. ft. 6½ in., 89 ft. 10⅞ in., would be 66.9.2, 71.6.4, and 89.10.7, respectively. It will be noticed that the last figure is eighths of an inch. For closer work to sixteenths of an inch, one would show 91 ft. 11 15/16 in., as 91.11.75. The 7 is eighths and the 5 is half of an eighth, viz, the sixteenth. With hundreds of dimensions to be taken such chalking down whilst the tape is " open " points to time saving. The booking can be done always in single large operations when the eyes are constantly on the paper and the points concerned. An obvious aid, and a way of avoiding putting dimensions to the wrong places.

The instrument having been fully used for the frontage locations now moves to

" C.C.2." The principle for measuring the off-set dimensions will be applied to the various points on the adjoining property wall by fixing the 90-degree angle along survey line " C," turning from survey line " A." A similar procedure will follow as and when one is set up on " C.C.3." Here one notes the value of nearness to the walls for it becomes possible in many cases to use a 6-ft. rule and, with this swinging the arc, the offset dimensions can be easily seen and booked. Measurements along the side walls will be taken to the points painted and, as necessary, numbered consecutively. Diagonal dimensions, for example, dimension " B " on Fig. 1, and others similarly shown, should be obtained. The object here is not only correctly to portray the feature but, equally important, to present series of dimensions in such a way that by the resolving of small right-angled triangles one may check the total lengths of any wall, frontage, etc., and/or between any two points on the survey. The check would be against the figures obtained in closing the " box " of the survey lines " A," " B," " C " and " D." Broadly, the method shown is fool-proof, for it is open to be checked in every conceivable manner by simple arithmetic and elementary trigonometry.

In almost all town sites the ground within the site is either an old basement or at a lower level than the pavement. To close the " box " difficulties may arise in obtaining the dimensions along survey lines " B " and " C " owing to the drop just inside the hoarding. It is certain, then, that a plummet will be needed. In describing this operation it is presumed that the instrument is erected on " C.C.2," that the 90-deg. angle has been turned from survey line " A " and that the telescope now follows on survey line " C."

Using one of the straight hoarding boards one can cut in one edge, and at one end, a small " V " with a penknife. This is the point from which the plummet will hang down into the site to the lower level. The " V " is made to prevent the plummet line from rolling. Next make a mark some even number of feet along the edge of the board and correctly from the " V." The reason for this accommodation dimension is that more often than otherwise one cannot reach out to the line when the board has been fixed down in position along survey line " C." Next, fix the board with its working edge on survey line " C." It may be nailed down or weighted down. The plummet should hang clear of the wall on the inside of the site. When fixed, take the closing dimension to " C.C.2 " and add the three figures together. The position of the plummet from " C.C.2 " is now known.

Move to the lower level and obtain the dimension from the plummet to a firm point on the wall below. Subtract from the total and you have the position of the point on the wall under as related to " C.C.2 " This lower point, by the way, should be made at such a level as to be handy for measuring along survey line " C " when seeking the closing dimension between " C.C.2 " and survey point " 1." To continue measuring along S.L. " C " one must ensure a level tape either by driving pegs all at one level by other means.

On a peg driven firmly at survey point " 1 " make a mark on survey line " C " by sighting through the instrument. Then obtain the closing dimension for the additions which will form the total between " C.C.2 " and survey point " 1."

The operation down survey line " B " would be similarly carried out but a peg need not be fixed at survey point " 2." One can use the garden wall face as an accommodation when measuring along the survey line. To prove the box, erect the theodolite over survey point " 1," sight along S.L. " C," turn in 90-deg. along S.L. " D " and, on the white tape, read the accommodation dimension to the selected point on the garden wall and on line " B." Simple arithmetic will provide the result.

With the instrument erected on " C.C.3 " and the telescope correctly along S.L. " B " one can also check the dimension to survey point " 1 " against the even number of feet allowed between " C.C.2 " and " C.C.3."

A careful study of Fig. 1 will endorse the absolute simplicity of the whole of the operations, and, the great advantages offered to those who may use such a survey for layouts or other purposes.

TAKING LEVELS

To make the survey fully comprehensive at this stage of proceedings, and excluding plumbings to side walls, levels of the ground in the site, the pavement, gully, and centre of road should be taken. The level of the top of the garden wall might be found useful, too.

A matter of importance is to show the level at which the survey was taken within the site. This should be clearly indicated on the survey drawing. The level of the paint marks on the corners to which measurements were taken can be of great help to the party responsible for obtaining plumbings of the walls at a later date.

Levels of manhole covers in the roadway should be shown. One should make the drawing quite clear by stating that the level was taken " on the centre of cover " or at " this " point on the frame. Such data is helpful when obtaining the level of the invert.

All levels should be related to Ordnance Bench Mark. The position of the O.B.M. should be clearly indicated on the survey drawing. If the O.B.M. happens to be at some distance from the site, fix within the site an accommodation bench mark, show this on the drawing and give its relative value.

PRECISION SURVEYING

In achieving a survey similar to the small survey presented one has made a step in the direction of precision surveying. The pattern, simple as it is, can be applied to almost any structural site. In any event, should a line happen in certain circumstances to be at an odd angle to others the structural surveyor should present it with simplicity by calculating the angle out and indicating its inference, either for its whole length, or in the form of a right-angled triangle with dimensions, using the sloping line as the hypotenuse.

The procedure shown has great advantages for it offers to all users a ready approach to the figuring up of new parts of the structure. The user does not have to be an expert mathematician. Its simplicity proves its worth. Reflecting upon any other form of surveying for this site, one finds the traverse survey method of shooting lines anywhere round the perimeter complex, with untold trouble in calculating out the position of any one point as related to any other.

Here, the beginner in the office is given a drawing he can understand and work upon. On the structural side, too, one finds sufficient information to enable the positioning of the crane in the site, for a " section through " when drawn from the survey will show the obstruction presented to the jib of the crane when unloading from the street.

Here, too, is the maximum use of the 90-degree angle.

On the matter of time taken for such a survey experienced men can complete their work in appreciably less time than by any other method.

TECHNICAL EDUCATION TO-DAY

Need for Closer Liaison with Industry

THE need for establishing closer liaison and wider opportunities for interchanging views between technical colleges and industry was referred to by MR. D. E. WOODBINE PARISH, a member of the National Advisory Council on Education for Industry and Commerce and of the National Federation of Building Trades Employers' Education and Training Committee, during a recent visit to the Bolton Training College for Technical Teachers.

The college was set up in 1946 for the purpose of enabling mature men and women holding technical qualifications and having industrial and commercial experience to receive training to enable them to take up teaching appointments in further education. Under its director, Mr. G. C. Pawley, M.A., B.Sc., the college offers one-year courses for intending teachers of building, engineering and other subjects. Similar colleges have been set up more recently in Huddersfield and London.

MR. PARISH, addressing student teachers, said technical education was tending to become far too narrow in conception and appeared largely to be directed towards getting students up to a standard to enable them to pass certain technical examinations. As a result, there was a danger of the development of character and the appreciation of the wider issues of life being put in the background. This, together with the lack of training in good citizenship and moral integrity, could account for many of the current problems facing the nation.

He hoped that when the student lecturers took up their various whole-time teaching appointments they would endeavour to adopt a far broader approach in their teaching and so help students to derive a greater appreciation of, and satisfaction from, their work and be ready to accept an increasing degree of responsibility in the future.

MR. W. M. MACQUEEN, senior lecturer in building subjects at the college, in thanking Mr. Parish, expressed the hope that the building industry would continue to increase its interest at all levels in the work of the technical colleges and ensure that every encouragement was given to both administrative and craft pupils to pursue recognised courses of training.

OBSTACLES TO HOUSING PROGRESS

"Lack of Continuity of Work is Most Serious"

BY far the most serious limiting factor to Britain's housing progress was the failure to provide continuity of work, said the Sheriff of York, MR. F. W. SHEPHERD, at the Annual Regional Housing and Planning Conference in Harrogate, Yorks, on May 29.

Mr. Shepherd is chairman of F. Shepherd and Son, Ltd., building and civil engineering contractors, York, and he complained of local authorities not planning far enough ahead.

He said: "The placing of contracts is done in a most haphazard way without any regard to progress on contracts in hand. Advertising for tenders causes delay and brings in fresh firms who often submit quite uneconomic prices. Many builders fall badly behind with output. The record of firms tendering should be examined in order to assess their ability to carry out the terms of their contract.

"Prices should be agreed, the Ministry acting as arbitrators to secure that the prices arrived at are fair to all parties. The lowest price is often the most expensive in the long run. Thousands of pounds are lost in interest on capital standing idle in uncompleted houses and rent and rates lost, apart from the large amount of distress caused to those in dire need of houses."

Mr. Shepherd said that fresh contracts should be placed when existing contracts were no more than two-thirds completed. By this means workmen could be assured a regular job, materials could be ordered well in advance, and progress schedules prepared. At present the contractor finished his contract, missed the next contract on price and dispersed his men to other work. The successful contractor often took months to assemble another labour force and was behind his progress schedule from the start as a result.

Other Retarding Factors

Mr. Shepherd then made the following points:—

Payment.—"There is grave cause for complaint with regard to payment, particularly for increases in costs and settlement of final accounts. Increases in costs should be paid for in full each month."

Retention Money.—"Retention money should be fixed at a more reasonable figure in view of the guarantee bond usually asked for by local authorities."

Design.—"Simplicity of design reduces costs and helps speedy completion. The number of house types and designs should be kept to a minimum."

Mechanical Aids.—"Mechanical aids to building should be carefully selected. Such plant can materially assist progress but costs can be increased and progress hindered by injudicious use of the various kinds of plant now available."

Direct Labour.—"Direct labour has not proved a satisfactory alternative to competitive tendering because overheads as a rule are much higher. There is also often a lack of trained technical experience in site management and costing."

Trade Unions.—"It is just not true that trade unions impose restrictions on output. At present there is a seller's market bidding for trade labour. It has always seemed to me paradoxical that when work is scarce output is much higher than when it is plentiful, but incentive payments have taken the place of the fear of the sack as a spur to output."

Mr. Shepherd concluded: "Freedom from restrictions; the abolishing of the present system of development charges on land developed for small- and medium-sized houses; unrestricted flow of materials; regular flow of orders from local authorities with maximum financial assistance to purchasers of houses for private sale, together with much more prompt payments to contractors from local authorities would, in my opinion, give a tremendous fillip to the production of houses."

HOUSE-BUILDING IN WALES

"Labour the Governing Factor"

SIR LESLE JOSEPH, chairman of the Housing Production Board for Wales, recently met Wrexham Town and Rural Council members, together with local builders, when the building position was reviewed.

Sir Leslie stressed that the governing factor in the area was definitely labour and not materials. That applied to North Wales generally, he said, although in Wrexham the position was better than in Wales as a whole, where the percentage of building labour engaged on housing was 33, compared with 40.9 in the Wrexham area.

There had been an improvement in connection with materials, and even bricks were now more plentiful, he said.

Among matters referred to was the importance of stimulating recruitment of apprentices to the building industry.

"BUILDING TO-DAY"

Exhibition at Northampton

NORTHAMPTON COLLEGE OF TECHNOLOGY is inviting builders and others to a "Building To-day" exhibition between July 4 and 10. Visitors will find a variety of displays and demonstrations featuring the work of the students, applications of the latest building research, and the training and opportunities offered to young men who choose a career in the building industry.

The exhibition, arranged by the Northampton County Borough Education Committee and the Northampton Associations of Building Trades Employers and Operatives, in co-operation with the Ministry of Works, is to be opened at the College of Technology, St. George's-avenue, by Sir John Brown, K.C.B., C.B.E.

Other organisations taking part include the Northampton County Architect's Department, the East Midlands Gas Board and East Midlands Electricity Board, and the Coal Utilisation Council. The exhibition will be open to the public daily between 10.30 a.m. and 8 p.m., except Sunday, admission free.

Pest Research

"Pest Infestation Research, 1950," recently published by H.M. Stationery Office for the D.S.I.R., describes the work of the Pest Infestation Laboratory on the biology of insect pests, grain storage, biochemistry, insecticides and fumigants during the year. This included practical work on insecticides which dealt with their use in sprays, powders, films and impregnating media. According to the booklet, wettable powders containing certain insecticides have been applied to building surfaces and have been found to retain their toxicity for periods varying from 35 days to four months. The price of the booklet is 1s. 10½d. post free.

BUILDING WAGES

National President: "No Justification for Increases"

SPEAKING at the half-yearly meeting of the South-Western Federation of Building Trades Employers at Bristol, on Wednesday, MR. J. IAN ROBERTSON, National President, said: "Following so soon after the Chancellor's warning that the granting of new wage claims would be bound to cause inflation, the decision of the Amalgamated Society of Woodworkers at their annual conference last week to ask for an increase in wages of 6d. per hour is very disturbing. I can see no justification for the demand which, if met, would add more than £60m. to the annual wages bill of the industry and would, unless accompanied by greater production, increase the cost of building a municipal house by about £60, the equivalent in rent of 1s. 0d. per week. There is already under consideration a claim for an extra week's paid holiday which would cost the industry between £6m. and £7m. a year.

"The demand for 6d. is the same as that made last year. Does this mean that the conference deliberately ignored not only the increase of 3d. per hour paid from early in February, which, as one of their leaders pointed out, compared favourably with increases in other sections of industry, but also the important point that the wages of building trades operatives are linked by a sliding scale with the Retail Prices Index so that wages automatically rise with the cost-of-living?"

Next week, the N.F.B.T.O., with whom the final decision rested, would be holding their annual conference at Teignmouth, and he appealed to the delegates to approach the whole question of wage claims in a statesmanlike manner, and to be guided by their experienced leaders who recognised that the substantial pay rises of recent years had been granted by the employers only at the serious risk of putting building costs higher than the public could or would pay. Already large numbers of owners were doing their own repairs, and many self-help associations were springing up and he was sure that if the cost of building rose any further, increasing numbers of building owners, feeling more and more the effects of the Government's policy of restricting credit, would find it impossible to employ them. "The margin between the industry and unemployment is, in my view, a very narrow one," he declared.

GRIMSBY TO TRY "DIRECT LABOUR"

Experiment with Four Houses

BY TEN VOTES TO FOUR Grimsby housing committee on June 4 decided to ask the town council to instruct the borough engineer, Mr. J. V. Oldfield, to build four houses by direct labour instead of by private builders' contract. This is in the nature of an experiment.

COUNCILLOR M. LARMOUR (Labour) suggested this course after hearing that 27 building licences had been returned.

COUNCILLOR A. C. CORRINGHAM (Municipal Group), himself a builder, claimed that direct labour had cost another authority thousands of pounds more than the lowest tender. To this COUNCILLOR LARMOUR replied that he could produce direct labour schemes that had been a success.

THE SOFTWOOD POSITION

Reduction in Shippers' Prices Unsettles Market

From a Correspondent

THE main item of news in the timber trade is the sudden change in shippers' prices for softwood. Within the last two or three weeks certain shippers have come into the market with offers which show substantial reductions on levels which have been ruling for some time past. A drop in prices had been expected in the trade, but not so suddenly or extensively. This development has rather unsettled the market, particularly as softwoods are still tied to consumer licensing, which means that the softwood which the trade imported at the higher price levels existing until recently cannot move into free consumption.

This development in the softwood trade does not seem to have affected the hardwood market where, in the main, the tendency is for prices to become more stabilised.

In the plywood trade, it is learned that the Timber Control scheme whereby £1m. worth of plywood National stock was offered to the trade has been well supported. It is believed that importers have purchased up to approximately 80 per cent. of the allocation. This has earned for them the right to further import licences which are available until December 31 next.

Another development in the plywood trade has been the decision that, as from May 23, Finnish birch blockboard can be purchased by importers under the Timber Control PLY 519 scheme. This new move is welcomed as a further step along the road to freedom.

There continues to be a weakening of c.i.f. prices for plywood, and this is limiting the amount of forward business on the part of importers who are waiting to see when and if imported plywood prices become more stabilised before entering into further commitments.

NEW TOWER CRANE

Aid to Handling Materials

A NEW electric tower crane is being manufactured in this country by W. E. Bray and Co., Ltd., of Feltham. Known as the "Brayda," it is claimed to be able to handle safely and efficiently many jobs now done manually, and to dump loads where required in a speedy and precise manner. This, as a result, makes for a considerable saving in time and manpower requirements.

Grapples for bricks and concrete slabs are among the appliances available. Dumping grabs and skips for attachment to the crane facilated the handling of a variety of building materials. Its normal loads include such items as cement and aggregates, bricks, girders, fittings and site equipment.

All the motions of the crane are electrically operated from the cabin, which can be raised or lowered by a hand-operated winch. The height of the hook from the ground with the jib horizontal is 75 ft., and 128 ft. when at minimum radius. A turning radius of 11 ft. 6 in. on the inside track makes the crane suitable for confined sites. At the highest position of the cabin, there is adequate vision to load over an obstruction of 50 ft.

Working from round the perimeter, the "Brayoda" can dump loads at maximum radius in the middle of a structure 115 ft. wide. If working from a central track this span is increased to 131 ft. The maximum height of the building with the jib straight can be 70 ft., with the jib cranked this is increased to 98 ft. The jib has a slewing speed of 1.1 r.p.m, and 39 secs. is the time taken to reduce the radius from 65 ft. to 20 ft. with a load of 1½ tons. A safe working load of 3½ tons is obtainable at a hook height of 128 ft., but as a safeguard, an indicator gives visible and audible warning if the jib is overloaded at any position.

The crane can be dismantled for transportation by eight men within 12 hours, and erected by the same number of hands inside 16 hours. Apart from the actual erection of buildings, it can be employed in the stacking of materials and the loading of hoppers, mixers and wagons.

ASBESTOS CEMENT PIPES

Ministry Circular On Use for Water Supply

The Minister of Housing and Local Government has sent a circular (No. 51/52, dated June 6) to statutory water undertakings stating that he has explored with the asbestos cement pipe makers the possibility of an increased output in view of the serious difficulties experienced by water undertakers and others in obtaining deliveries of certain ranges of cast iron pipes within a reasonable period.

He is advised, the circular states, that an increased output of 3 in. asbestos cement pipes may be expected in three or four months' time and that early ordering will assist the manufacturers in their arrangements to make available larger quantities of pipes and accessories and to give quicker delivery.

The increased output at present will be limited to the 3 in. range of pipe, and authorities are advised to consider any possibilities of utilising 3 in. pipes in lieu of larger sizes where the former will effectively serve the same purpose.

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SOUTHERN COUNTIES

Half-Yearly Meeting

THE half-yearly meeting of the Southern Counties Federation of Building Trades Employers was held at Bournemouth on May 27 and 28 (as reported last week) under the presidency of Mr. Horace H. Shears.

Briefly reviewing the work of the Federation, MR. SHEARS referred, in particular, to the need for securing an annual intake of 2,000 apprentices. He commended the continuing enthusiasm of representatives on local joint apprenticeship committees. On the subject of education, he drew attention to the Southern Counties Higher Education Scheme, which, he said, might well achieve a revolutionary change in the industry in an evolutionary manner.

He spoke of the problems which were being experienced in some localities of the Region and gave an assurance that they were known to the Federation and that every effort was being made to alleviate them.

Licensing Policy

Speaking at the luncheon held in connection with the half-yearly meeting, MR. IAN ROBERTSON, president, N.F.B.T.E., referred to the next building licensing period which began on July 1. He said it was a vital matter, not only for builders (especially those with small businesses) but for those living in houses which urgently needed repair or reconditioning, and for those wishing to have new houses built.

Although the Government was anxious to remove controls, it naturally did not want to take any action which would divert labour from the defence and housing programmes. It was the Federation's view that the licensing limits could be swept away, or raised considerably, without any injurious effect on other urgent work. So far as builders' work was concerned, the cost was unavoidably high and the general financial stringency was likely to become more, instead of less, severe. It was felt that licensing tended to keep prices up because builders could not plan ahead and their labour was, therefore, often under-employed.

The removal or easing of licensing would do much to counter the fear that there might be unemployment in the industry and thus lead to increased production. Mr. Robertson said that the rate of new house-building could be speeded up by raising substantially the present £100 limit and then fixing a much higher limit for the reconditioning of existing, and the building of new, houses.

MR. SHEARS also spoke at the luncheon. After referring to certain aspects of the work of members of the Federation, he said that the Federation was bending its energies to the task of doing all within its power to ensure that building efficiency and productivity were increased. It was striving all the time to enhance the status of builders among other industries and professions, and to facilitate the industry being of the greatest service, at the least possible cost, to the country and to the private building owner.

Commonwealth Building Research Reports

The Division of Building Research of the Commonwealth Scientific and Industrial Research Organisation, Graham - road, Highett, S.21, Victoria, Australia, has issued reports No. R5 on Failures of Wall and Floor Tiling: Their Causes and Prevention: and No. R6 on the Coefficient of Solar Absorptivity and Low Temperature Emmissivity of Various Materials.

NEWS IN BRIEF

Mechanical Handling and Industry

At a luncheon given by Associated Iliffe Press, Ltd., on June 4, to mark the opening of the Mechanical Handling Exhibition, Sir Walter Monckton, Minister of Labour and National Service, said there were three ways by which mechanical handling could help industry. First, by reducing accidents, fatigue and strain; second, by giving greater efficiency by lowering costs and accelerating movement of materials in the various processes of production and packing; and third, by liberating human labour for more directly productive work.

Commercial Bee-Keeping Banned

The appeal of Mr. C. J. Dutton against the refusal of Meriden Rural District Council to allow him to build a bungalow and establish a commercial apiary in Berkswell-lane, Meriden, has been dismissed by the Minister of Housing and Local Government. The proposal, if permitted, states the Minister, would be likely to lead to the introduction of diverse types of development into an area which was proposed to be reserved, in the development plan, as a rural zone, and which was at present almost wholly agricultural in character.

Books on Careers

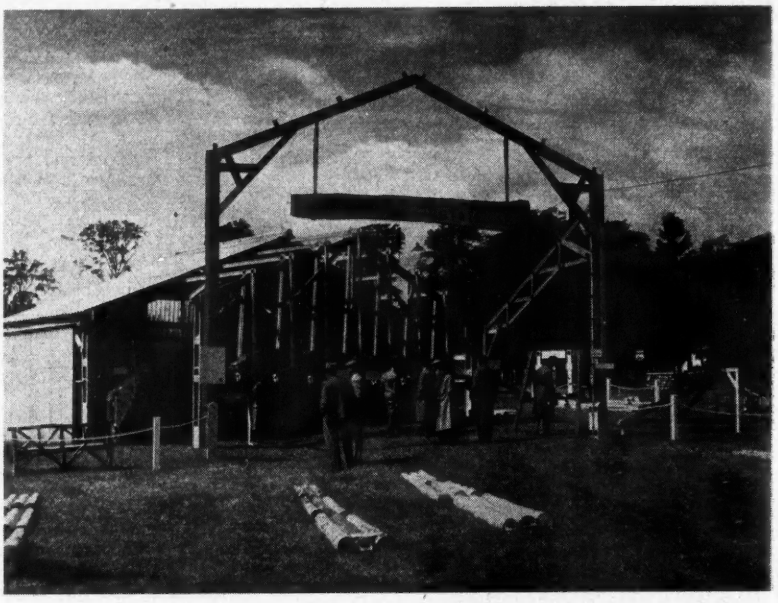
Two new booklets, "The Glazier" and "The House Painter and Decorator," have been published in the "Choice of Careers" series, which are issued by the Central Youth Employment Executive and intended primarily for the guidance of boys and girls who are deciding what form of work to take up on leaving school. These illustrated booklets are two of a group designed to introduce readers to the choice of occupations open to them in the building industry and to give information on the qualities and training required by boys who enter various occupations.

The Chemistry of Cement

The Third International Symposium on the Chemistry of Cement will be held in London, England, from September 15 to 20, 1952, and will be organised jointly by the Building Research Station and the Cement and Concrete Association, according to the Division of Building Research, Ottawa. The present tentative programme provides for more than 20 papers to be presented to the meetings under the general headings of: Constitution of Portland Cement, The Setting and Hardening of Portland Cement, Special Cements, and Applications of Research. During the course of the symposium visits will be arranged to places of interest. Attendance will be by invitation only.

Rubber in Building

The many applications of rubber in building operations of various kinds, are described in a film, "Rubber in Building," which has been made by the British Rubber Development Board. It is intended that the film will be seen by those engaged in all branches of the building industry. It shows first how rubber is used on contractors' equipment, and its use in making ducts in concrete and in the soundproofing of floors. The part natural rubber plays in floor finishes as a latex-cement composition is also depicted, as is rubber flooring in sheet form on a latex-cement screed. The film assumes an added interest when shown in conjunction with another feature produced by the B.R.D.B. entitled "This is Rubber," which supplies background information about natural rubber, its growth and treatment.



TIMBER ENGINEERING AT BATH AND WEST. The structural applications of home-grown timber using the modern technique of bolted joints with timber connectors were demonstrated on this stand of the Chatsworth Settlement (Hardwick Estates) at the Bath and West Show at Nottingham recently. The stand, which featured a roof truss for a farm building having a clear span of 27 ft. and carrying its full design load of just over two tons, was awarded the Silver Medal Certificate of the Royal English Forestry Society or the best exhibit in the forestry section.

Appointments Offices to Close

The Ministry of Labour and National Service announces that because of the need for economy in Government expenditure eight of the Ministry's 11 Appointments Offices are to be closed. The Appointments Service for the whole of the country will now be provided by the three remaining Appointments Offices. These are in London, Manchester and Glasgow. The London Appointments Office, at 1-6, Tavistock-square, W.C.1, will serve the South of England, the Midlands and South Wales. The Northern Appointments Office at Aytoun-street, Manchester, 1, will cover the North of England. The Scottish Appointments Office at 450 Sauchiehall-street, Glasgow, C.2, will serve the whole of Scotland.

Darlington Development Plan Approved

The Minister of Housing and Local Government has approved, with modifications, the development plan for the County Borough of Darlington, County Durham.

Purchase Tax on Immersion Heaters

Up to now electric immersion heaters rated at under 4 kw. have been chargeable with purchase tax. New arrangements made by H.M. Customs and Excise mean that as from May 6, 1952, all electric immersion water heater rated up to (but not including) 7 kw. are chargeable with 100 per cent. purchase tax.

Badly Weathered Houses

The problem of badly weathered houses has been one of concern to the Walsall authorities for some time. A Corporation estate had 14 houses built 30 years ago of concrete blocks. In 1951 they were given special exterior treatment which consisted in scraping the weathered surfaces and spraying them with liquid cement. Mr. A. E. Bowater, Walsall's Housing Manager, said that the experiment had proved successful and had stopped the damp getting through. He added that the cost of the facing process was between £100 and £112 per house.

Prestressed Concrete Fencing

Prestressed concrete fencing is being used for the first time in this country on any significant scale by the Metropolitan Water Board at Chingford, Essex, for fencing in their recently completed 3,600,000-gallon William Girling Reservoir. The design used was developed after close collaboration between the Board's engineers and Dow-Mac (Products), Ltd., who were responsible for the manufacture of the units. The fence consists of posts at 9-ft. intervals with top and bottom rails spanning between them which support 17 pales to each bay.

Planning Appeal Dismissed

The appeal of Mr. A. B. Hobbs against the refusal of Croydon Corporation to allow his company to build a motor repair workshop and showroom at No. 151, St. James's-road, Croydon, and to connect, by means of an elevated roadway, the proposed new buildings with the firm's existing premises in Tavistock-grove, has been dismissed by the Minister of Housing and Local Government following a local inquiry.

Time Lost through Rainfall

Some 300 copies of "The Builders' and Civil Engineers' Guide to Estimating Time Lost through Inclement Weather (Rainfall)," compiled by the late A. F. Steele, are still available and may be obtained, price 1s. 9d. post free, from Mr. R. L. Sewell, Marlborough Lodge, Totnes, Devon. The tables are based on the rainfall over a period of 50 years and covering the whole of the British Isles, and the guide is designed to give as accurately as possible a forecast of the percentages which it will be necessary to add to the labour cost on any given contract in order to cover the time lost through rainfall.

Laying Drain Pipes

"Laying Drain Pipes," No. 24 in the Ministry of Works series of advisory leaflets, deals with underground pipework from the house to the public sewer. It gives practical hints on laying and jointing both glazed-ware and cast-iron pipes, manhole construction and forming connections. Points to watch in order to ensure a good job are described, with diagrams of boning over sight rails for line and level, of manhole construction and of concrete work for bedding, haunching and surrounds. Copies obtainable from the Stationery Office (post orders to P.O. Box No. 569, London, S.E.1) or through booksellers, price 3d. each, with reductions for larger quantities.

TRADE NEWS

Laboratory Equipment

Griffin and Tatlock, Ltd., of Kemble-street, Kingsway, W.C.2, have issued a catalogue (No. 16 B-S) which details specialised instruments manufactured by them for use in various laboratories. Newly-developed equipment ranging from stop-watch holders to photo-electric sedimentometers and kinetic electriators are included in the catalogued selection. Much of the apparatus was recently on view at the B.I.F. at Olympia.

Precast Concrete Floors

The advantages of their precast method of concrete flooring and roofing are described in a leaflet issued by Transco Precast Floors, Ltd., Park House, Brentor, Tavistock, Devon. "Transco" beams have been designed on the combined principle, i.e., they depend on the *in situ* screed to assist in taking the compressive stress; the name itself is an abbreviation of transverse compression and relates to that portion of the concrete screed which extends down between each filler block and rests on the shoulders of the beams. A standard floor when tested showed a safety factor of 6.2 at commencement of failure and 8.7 at ultimate failure, whereas it is stated the relevant Code of Practice requires a safety factor of only 3. "Transco," it is claimed, eliminates timber and all form work; dispenses with hardcore filling to ground floors and makes oversight concrete unnecessary; and is highly competitive in cost.

AN ALUMINIUM HOUSE

New Design For Export

MR. HUGH MOLSON, Parliamentary Secretary, Ministry of Works, opened the prototype of a new type of factory-made aluminium house, called "The Commonwealth House," on a site at Brentford on Tuesday. The house has been designed primarily for the export market, and for Australia, New Zealand, Rhodesia and South Africa in particular. A three-bedroom house with a total floor area of 905 sq. ft., the design has been worked out by Mr. C. A. V. Smith, A.R.I.B.A., of London, in collaboration with Mr. J. P. Mockridge, A.R.A.I.A., of Melbourne, Australia. The aluminium frame of the house, the wall cladding and roofing are supplied by Aluminium Union, Ltd., of London, and there are various other component manufacturers and suppliers. It is estimated that four or five non-skilled men could erect the house in 10 days. The cost of the house is to some extent governed by the rate at which production can proceed, but, based on currently ruling conditions, the price per house for a minimum order of 10 houses is estimated at £1,650.

Mr. Molson praised the designers of the house for their initiative, enterprise and courage and said that he thought the house would be welcomed in Africa where there was a shortage of skilled labour, and also in Australia and New Zealand where such labour is costly. He was particularly impressed, he said, with the insulation properties of the house, which made it cool in hot weather and warm in cold weather, and with the device for keeping away termites.

Employment in Building Industry

There was an increase in April of 2,000 in the numbers employed in the building and contracting industries, bringing the total at the end of the month to 1,425,000, according to figures published by the Ministry of Labour and National Service.

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PRAIRIE OIL AND GAS

Recent Canadian Developments

THE past year has witnessed a number of striking and significant developments that have in fact ushered in a new phase in the history of prairie oil and gas, according to the Monthly Review of the Bank of Nova Scotia.

Just a little over a year ago Alberta oil, brought 1,126 miles by pipeline from Edmonton to Superior, Wisconsin, and thence down the Great Lakes by tanker, reached Ontario refineries, and the capacity of the pipeline is rapidly being increased. Before the end of last year, the announcement was made that a second oil pipeline would be built, this time westward across the Rockies. Work on this 700-mile line has already commenced, and by 1954 oil should be flowing through it to serve the Vancouver area.

Natural gas, too, has begun to move beyond the confines of the home market: the export of a limited quantity of gas to Montana for defence purposes, authorised early last year by the Alberta Government, began in February, and last month the Alberta Government gave its approval to a plan for building a pipeline to export gas from the rapidly developing Peace River area to Vancouver and the Pacific North-West States.

The year also witnessed the beginnings in Alberta of an industrial development based on natural gas as fuel or raw material that may in time assume substantial proportions. Construction of two large chemical plants has begun at Edmonton, now Canada's fastest-growing city; a little farther east a nickel refinery is being built; and smaller industries also based on oil or natural gas have sprung up in various parts of the province.

Another vista is opened up by the widespread interest in the Athabaska tar sands around Fort McMurray in Northern Alberta. Several companies have taken out leases with a view to exploring the feasibility of obtaining commercial production from the oil-saturated sands.

In the five years since the discovery of the Leduc field, says the Review, the oil industry of Western Canada has forged ahead rapidly. Proved reserves have increased from less than 50 m. barrels to around 1,500 m. The number of producing oil wells has grown sevenfold. Oil production, though strictly held down in line with available markets, is currently around nine times the 1946 level. Thanks to this rapid growth, Canada is now supplying about one-third of her own oil needs, as against less than 8 per cent. of the smaller total she was then consuming.

The gains in production and reserves reflect the acceleration of exploratory and developmental activity. The vast extent of the search is indicated by the fact that during 1951 oil strikes were made as far apart as Virden, Manitoba, and Fort St. John, in the Peace River area of British Columbia, a distance of nearly a thousand miles. While the bulk of the work is being carried on in Alberta, exploratory activity now extends east from the Rocky Mountains across the vast sedimentary basin of the western plains to the pre-Cambrian Shield and north from the United States border to Great Slave Lake in the North-West Territories.

OVERSEAS BUILDING

[From Our Own Correspondent]

Australia.—The food canning firm of H. J. Heinz Co., Ltd., is to build a £3,000,000 factory at Dadenong, Victoria, Australia. The plant will be located on a 70-acre site outside the town and will employ some 800 people. A farm with an area of 5,000 acres is being established nearby to supply vegetables. . . . A contract worth nearly £120,000 has been obtained by Rocla Pipes, Ltd., of Melbourne, for the supply of a new type of pre-stressed concrete pipeline required by the Brisbane City Council for the sewerage authority. The pipeline will be about 7½ miles long. The company is to build a new plant at Groveley, Brisbane, to manufacture the piping.

Australia.—Two Melbourne-owned New Zealand afforestation companies, Matured Pine Trees, Ltd., and Pine Bach, Ltd., are applying to the Melbourne Stock Exchange for listing in order to raise some £58,000 to build a sawmill and obtain plant for development. . . . The Western Australian State Government will provide financial backing for a new £A2,000,000 cement plant to be established at Fremantle. The British company engaged in the project is the Rugby Portland Cement Company of England. The plant will take between two and three years to complete and will have an initial capacity of 100,000 tons of cement a year.

Australia:—A Queensland report says that preliminary work has begun on a new £750,000 Mater Mothers' Hospital to be built in the present South Brisbane Mater Hospital area. It will be a six-storeyed building of brick, steel and concrete and will take five to six years to build.

Costa Rica.—A new hydro-electric plant is to be erected in Costa Rica some time next year to ensure adequate supplies of electric power during rainy seasons for industrial and domestic users. . . . A new airport is also to be constructed near "El Coco." . . . At the same time there are plans for a large roads and public works project in order to provide an adequate network of paved roads to act as feeders to the Costa Rican section of the Pan-American Highway. It is thought that foreign firms will be approached for estimates for this work by the Costa Rica Government.

Israel.—The Israel irrigation authorities are to build five giant dams in the Negev and in parts of Galilee where water is scarce. These dams will hold between one and two million cubic metres of water. Materials for the schemes will be imported once the plans are approved by the irrigation authorities. There is also a shortage of machinery required for building, and permits to import this are being awaited.

Johannesburg:—A further contract for native housing has been awarded to Laing and Roberts (Pty.), Ltd. This is for 1,000 houses comprising 500 blocks of two houses. The value of the work is about £250,000 and the houses will eventually provide accommodation for 5,000 natives.

South Africa.—Two very large factories which it is estimated will cost in the region of £1,400,000 are to be erected on adjoining sites near Cape Town. The first is a £1,000,000 motor vehicle factory for the Austin Motor Company of South Africa, and the second is a large crockery factory which will cost about £400,000. The Austin factory will be one of the largest in the world. It will have a floor space of 180,000 square feet. Other buildings will include the administration, experimental, canteen and service blocks. The crockery factory is the first in the Union to manufacture hotelware and is being constructed on the lines of English crockery factories. . . . Other large building projects in the Union include the construction of an oil refinery in Durban. The work is being supervised by an American constructional engineer, Mr. G. B. McGuire. The refinery will cost between £8,000,000 and £10,000,000. According to Mr. McGuire the refinery is not being built on firm ground, and it is expected that about 3,000 concrete piles varying in length between 55 feet and 105 feet will be needed to take the weight of the installations.

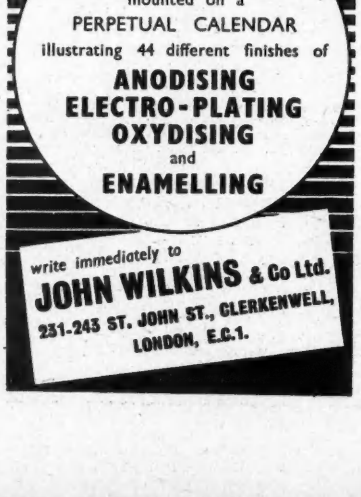
U.S.A.—One of the largest housing projects will follow the opening of the Columbia River Scheme which will bring power and irrigation to 2,500,000 acres of the north-west region of the United States. It is estimated that homes and amenities will be provided for 150,000 people. Building companies in the U.S.A. are already planning housing schemes, shops, churches, cinemas and amusement centres.

OFFICIAL NOTIFICATION

Sterling Area Softwoods

Timber licensing officers in Government Departments have been authorised to grant consumer licences freely for any purpose for softwoods from the British Commonwealth except Canada, according to a notice issued by the Ministry of Materials. This concession should be especially useful to firms dealing in East African softwood such as Podo and the Pitch Pine now being imported from British Honduras and the Bahamas. No doubt there are other species which will benefit too.

The Timber Control is anxious that the export of these timbers which in some cases is a comparatively new venture for the purposes concerned should be a success. Anyone who has difficulty in obtaining a licence should, therefore, get into touch with Timber Control immediately.



THE SCOTTISH BUILDER

Foam Slag Factory to Close

GLASGOW CORPORATION has decided to discontinue the foam slag factory at Amulree-street, Glasgow, opened five years ago and designed to produce 2,000 houses per year. Actual production has been 1,120 houses over the five years, and nothing has been done since March, 1951. Total cost of the plant, one of the few of its kind in the country, was in the region of £90,000. It was designed to operate on a continuous basis, producing large precast slabs from from slag.

The failure of the plant has been due to a number of factors and finally to the decision to switch over to multi-storey construction where foam slag is less useful. Some £71,000 is being written off and the premises disposed of to the best advantage.

East Fife Hospital Building

THE SOUTH-EAST SCOTLAND Regional Hospital Board has approved a three-stage plan of development for East Fife. This involves immediate attention to surgical and chronic sick cases without structural work, followed by a moderate building programme to cover all needs. The final stage is a long-term building programme to give maximum service. Instructions have been given to officials to put this programme into operation.

New Works For Greenock

GOVERNMENT approval has been given for one of the biggest industrial projects ever launched at Greenock—a proposal by International Business Machines World Corporation, a U.S. controlled organisation, to build a big factory in the Kip Valley, near the town, for the manufacture of accounting machines, electric typewriters, and office equipment. It is planned that the factory will employ, after a number of years, about 6,000 workers.

The site of the factory occupies about 110 acres, and takes in land on two farms. In addition to the factory, which will be erected by Scottish Industrial Estates, there will be extensive grounds and sports fields round the site, and it is planned by I.B.M. to construct a country club with an adjoining golf course for the workers.

Recently, Mr. Thomas A. Kirkland, British director of the I.B.M. Corporation, said there was no limit to the capacity of the new factory, and expressed the hope that it would be in production within a year of the start of building. It was learned from an official source, however, that scarcity of steel may prevent an immediate start to building, and that there may be a delay of a few months.

The Town Council has promised to co-operate with I.B.M. in providing housing accommodation for the workers.

NEW BUILDINGS

Edinburgh.—Corporation granted warrant to erect an administration and assembly hall at the Inch housing scheme school in Gilmerton-rd. It will be a one-storey building with accommodation for 420 pupils and will cost £20,000.

Glasgow.—Plans are in the hands of their own staff for scheme of new workshops, new showrooms and other additions which are to be erected at Parliamentary-rd. by the Universal Garages (Glasgow), Ltd., 367, Parliamentary-rd., Dennistown, Glasgow.

Glasgow.—Plans have been prepared for new public school at Bellrock-st., for which the architect is Alexander Buchanan Campbell, 231, St. Vincent-st., Glasgow.

Glasgow.—Plans to be prepared for alterations and additions at Argyll-st. by the architects of the Scottish Wholesale Co-operative Society, Ltd., 119, Paisley-rd., Kinning Park, Glasgow.

Grangemouth.—T.C. intends to build 112 houses at an est. cost of £240,000.

Inverness-shire.—Road Haulage Executive architects have plans in hand for a new road traffic depot, est. to cost £18,000, which will be erected at Longham-rd., Inverness.

Kilmarnock.—Corporation to erect 130 houses at various sites at an est. cost of £218,500. The architect is N. S. Sutherland, F.I.A.A. & S., Municipal-chbrs., Kilmarnock.

FUTURE CONSTRUCTION

PUBLIC APPOINTMENTS

Full details of Public Appointments open will be found in the Advertisement pages of this and previous issues.

CONTRACTS OPEN

For some contracts still open but not included in this list see previous issues. Those with an asterisk are advertised in this number. The dates at the heads of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained.

BUILDING

JUNE 6.

†**Bristol City C.**—Alterations and adaptations to Kingsdown secondary school. City A., Council-hse., College-green, 1. Dep. £2 2s.

JUNE 16.

*†**Birmingham City C.**—Erection of six flats in Moseley-st. (contract 159P); 16 maisonettes at The Radleys, Sheldon (contract 214); and 70 dwellings at Hawkesley farm estate, West Heath (contract 224). City E. & S., Civic Centre, 1. Dep. £2 2s. each contract.

JUNE 17.

*†**Aylesbury R.D.C.**—Erection of 12 houses at Oakley housing site. Council's A., 4, Temple-sq. Dep. £3 3s.

†**Enfield U.D.C.**—Erection of 44 houses on the Bullsmoor-la. site. E. & S., 7, Little Park-gdns. Dep. £2 2s. Tenders by July 3.

*†**Enfield U.D.C.**—44 houses at Bullsmoor-la. E. & S., 7, Little Park-gdns., Enfield. Dep. £2 2s. Tenders by July 3.

JUNE 18.

*†**Chester-le-Street R.D.C.**—Erection of (a) 28 two-storey flats at Barley Mow housing estate, Birtley; (b) 33 two-storey flats at Longshanks-la. housing estate, Birtley; (c) 16 two-storey flats and 44 houses at Kibblesworth housing site; (d) 16 two-storey flats at Petton housing site; (e) 10 houses at Bournmoor housing site; and (f) 16 two-storey flats at Sacriston housing site. Council's A., Estate Office, Gt. North-rd., Birtley, Co. Durham. Dep. £2 2s.

JUNE 19.

*†**Coventry City C.**—Erection of prefabricated secondary school at Broad-la. City A., Bull-yard, off Warwick-row.

*†**Essex C.C.**—Erection of hutted classroom and cloakroom at Thundersley cty. prim. sch. Cty. A., County Hall, Chelmsford.

*†**Newcastle Regional Hospital Board.**—Erection of administration offices and residential accommodation for nurses at Aycliffe Hospital, Heighington. Secretary, "Dunira," Osborne-rd., Newcastle, 2.

*†**Newcastle Regional Hospital Board.**—Adaption of Preston Tower as a nurses' residence. Secretary, "Dunira," Osborne-rd., Newcastle-upon-Tyne, 2.

*†**Newcastle Regional Hospital Board.**—Alterations and minor extensions to two-storey ward block at the South Shields General Hospital to provide a physio-therapy department on the ground floor and a children's ward on the first floor. Secretary, "Dunira," Osborne-rd., Newcastle-upon-Tyne, 2.

JUNE 20.

*†**Cambridge City C.**—Erection of 12 bungalow dwellings for aged persons in Queen Edith's-way (contract 47). City E. & S., Guildhall. Dep. £3 3s.

JUNE 21.

*Buckingham R.D.C.—18 houses at three sites. Scherrer and Hicks (FF.), 310, Upper Regent-st., W.1. No dep.

*†**Newcastle Regional Hospital Board.**—Erection of X-ray department at Normans Riding Hospital, Winlaton. Secretary, "Dunira," Osborne-rd., Newcastle-upon-Tyne, 2.

JUNE 23.

Chepstow R.D.C.—Erection of six houses at Trelleck-rd., Tintern. Thomas & Morgan, architects, 23, Gelliwasted-rd., Pontypridd. Dep. £3 3s.

*†**East Suffolk C.C.**—Two contracts (1) extensions to Shotley primary school, and (2) extensions to Bramford secondary modern school. County A., County Hall, Ipswich. Dep. £2 2s. each application. Tenders by July 18.

Lowestoft B.C.—Erection of 72 houses at Whitton estate. B.E., 49, High-st. Dep. £2 2s.

*†**Tottenham B.C.**—Erection of 20 flats at Orchard-pl. Boro' E. & S., Town Hall. Dep. £2 2s.

JUNE 25.

Liskeard R.D.C.—Erection of 12 houses and site works in three sections at Pensilva. Higman and Ford, architects, 2, The Parade. Dep. £3 3s. or £2 2s. for one section only.

South Kesteven R.D.C.—Erection of 12 houses at Deeping St. James. H. Parsons, architect, Council Offices, 41, North-st., Bourne. Dep. £2 2s.

*Staines U.D.C.—Stripping and re-tiling of 16 houses at Stanwell-cl., Stanwell, and 18 at Ashford-cl., Ashford. E. & S., 240, London-rd. Dep. £2 2s.

*Thurrock U.D.C.—Erection of 19 houses at Stifford Clays estate, Grays. E. & S., Council Offices, Palmers-ave., Grays. Dep. £2 2s.

JUNE 27.

*†**Newcastle Regional Hospital Board.**—Erection of new admission hospital and two convalescent villas at St. Nicholas' Hospital, Gosforth. Secretary, "Dunira," Osborne-rd., Newcastle-upon-Tyne, 2.

JUNE 28.

Barnard Castle R.D.C.—Erection of 40 houses at Staindrop No. 2 site. J. Lawton, architect, 45, Galgate. Dep. £2 2s.

*Middleton B.C.—Houses at Hollies estate in two lots of 48 and 46. J. Pollard, Boro' A., Town Hall. Dep. £2 2s.

*†**Wigan C.B.**—Erection of extensions to Market Hall. B.E. Dep. £2 2s. Tenders by July 12.

JUNE 30.

*†**Beddington and Wallington B.C.**—Erection of 18 flats in Beddington Corner redevelopment scheme III (contract 2).—T.C., Town Hall, Wallington.

*Dover B.C.—Erection of eight houses at Napner-rd., Buckland Valley estate. Boro' E., Brook-hse. Dep. £2 2s.

*Tottenhall U.D.C.—Erection of 18 dwellings, Woodhouse estate. J. W. Mason, M.T.P.I., E. & S. Dep. £3 3s.

JULY 1.

Beeston and Stapleford U.D.C.—Erection of 15 houses and 16 flats at Ryecroft estate, contract 78. G. C. Hardy, surveyor, Town Hall. Dep. £2 2s.

*Salford City C.—Alterations to book-store at central library, Peel-park. City E., Town Hall. Dep. £1 1s.

Southwell R.D.C.—Erection of 16 flats, 34 houses and ancillary site works at Dale-la. site, Blidworth. S. Cooper, surveyor, 8, Westgate. Dep. £2 2s.

JULY 2.

*Deptford B.C.—Internal and external decorations to council houses. B.E. & S., Town Hall.

*Ploughley R.D.C.—Erection of eight houses with road-works, water mains and ancillary works, at Lower Heyford, Oxon. E. & S., Waverley-hse., Bicester. Dep. £2.

JULY 5.

*Swadlincote U.D.C.—Erection of 50 houses on Hartshorne estate. E. & S., Bark-hse., Midland-rd. Dep. £2 2s.

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JULY 7.

*County of Lincoln.—Erection of police houses, Stonebridge, Grantham. County A. No dep.

Ossett B.C.—Erection of 40 houses at Manor-la. and 26 houses at Swithenbank. Boro' S., Town Hall.

Stevenage U.D.C.—Erection of 70 houses on the Ryecroft estate. C., Council Offices, Stevenage, Herts. Dep. £2.

JULY 8.

*Fareham U.D.C.—Erection of 20 flats at Fareham Park estate. E. & S., Westbury Manor. Dep. £2 2s.

*Mansfield B.C.—Erection of public conveniences at junction of West-gate and Chesterfield-rd. B.E. & S., Carr Bank. Dep. £2 2s.

*Royal Leamington Spa B.C.—Erection of 20 houses on Lillington estate. Rayner and Fedoski, architects, 28, Parade. Dep. £2 2s.

JULY 9.

*Easingwold R.D.C.—Erection of (a) 6 bungalows at Newton-on-Ouse, (b) 4 houses at Brandsby, (c) 22 houses at Shipton-by-Beningbrough, and (d) 20 houses at Helperby. Hsg. S., Croft-hse. Dep. £2 2s.

JULY 10.

*Stourbridge B.C.—Erection of six shops, four maisonettes, two flats, nine garages and incidental site works at Norton estate. B.E. & S., Council House. Dep. £3 3s.

JULY 14.

Musselburgh B.C.—Erection of two three-storey buildings of 12 houses each in Fisher's Wynd and on three-storey block of 12 houses in Edinburgh-rd. Burgh S., Municipal Offices, Musselburgh.

JULY 15.

*Trinity House Corpn.—Reconstruction of the Gun-hse. at North Stack fog signal station, near Holyhead. Secretary, Trinity-hse., Tower-hill, E.C.3.

JULY 19.

Fulwood U.D.C.—Erection of 24 houses on three sites. Lillie and Kirkham (LL.), 105, Fishergate, Preston. Dep. £2 2s.

JULY 23.

*Gillingham B.C.—Erection of 39 houses on the Romany estate. Boro' E., Municipal-bldgs. Dep. £5 5s.

NO DATE.

Blofield and Flegg R.D.C.—Erection of 16 houses at Rollesby. Boardman & Son, architects, Queen-st. Dep. £2 2s.

*†**Felixstowe U.D.C.**—Erection of 74 houses on housing site No. 11, Mill-la., in lots of 36 and 38 houses. T.C., Town Hall.

North Cotswold R.D.C.—Erection of houses on various sites in lots of 14, 8 and 4. Pemberton & Bateman, architects, 21, Vine-st., Evesham, Worcs. Dep. £2 2s.

*N.W. Met. Regional Hosp. Board.—Applications for inclusion in the board's approved list of building contractors, part A, for work up to £10,000, and part B for works between £10,000 and £100,000. A. of the Board, Sheffield-st., W.2.

Sale T.C.—Erection of 40 dwellings on Oaklea Farm estate. Boro' E., Town Hall. Dep. £2 2s.

PAINTING, ELECTRIC LIGHTING, MATERIALS, ETC.

JUNE 20.

*†**Breconshire C.C.**—Internal and external redecoration of various schools. Cty A., Rhyd Offices, Brecon.

JUNE 21.

*†**Essex C.C.**—Internal and external renovations at (a) Loughton county secondary school; (b) Loughton county high school. County A., County Hall, Chelmsford.

JUNE 28.

*Stepney B.C.—Supply and fixing of kitchen fitments to flats on Sydney-st. housing scheme. Sydney Clough, Son & Partners, F./A., 39, Devonshire-st., W.1. Dep. £2 2s.

JUNE 30.

*Merton and Morden U.D.C.—Internal decorations at Morden Park Clubhouse, London-rd. E. & S., Morden Hall, S.W.19.

JULY 1.

*Weymouth and Melcombe Regis B.C.—Executing gas and/or electrical installations in 40 houses on Chapelhay estate. B.E. & S., 6, Pulteney-bldgs.

JULY 2.

*Staffordshire C.C.—Cleaning and repainting Pinfold castle and wards, canal bridges. Clerk to Cty C., County-bldgs., Stafford. Dep. £1 1s.

ROADS, SEWERAGE AND WATER WORKS

JUNE 17.

***Aylesbury R.D.C.**—Two contracts for construction of roads and sewers at (1) Oakley housing site, and (2) Stone housing estate. Council's A., 4, Temple-sq. Dep. £3 3s. each.

JUNE 21.

Colwyn Bay B.C.—Making-up of Glan-rd., Ffordd-y-Maer and Ffordd Cwstenin, Mochdre, in tarred macadam. B.E. & S., Town Hall.

JUNE 23.

†Hitchin R.D.C.—Works of water supply. D. Balfour & Sons, consultant engineers, 151, Victoria-st., S.W.1. Dep. £10.

Portsmouth T.C.—Roads and sewers, Leigh Park development, contract No. 5. City E., City Council-chbrs., Clarence-par., Portsmouth. Dep. £5 5s.

Sedgley U.D.C.—Surface dressing of roads within the urban district. E. & S., The Limes, Dudley-rd.

JUNE 25.

Whitehaven Corporation.—Sandwith service reservoir, contract No. 10a, Lake Ennerdale scheme. Rofe & Raffety, engineers, 3, Victoria-st., S.W.1. Dep. £2 2s.

JUNE 26.

Harrow U.D.C.—Construction of roads and sewers at "Cannon Croft" housing estate. E., Council Offices, Uxbridge-rd., Stanmore. Dep. £2.

JUNE 27.

Letchworth U.D.C.—Construction of roads and sewers at Grange estate (stage 4). E. & S., Council-hse., Broadway. Dep. £2 2s.

Maidenhead B.C.—Resurfacing of Bray-rd. (B.3028). Boro' E. & S., 14, Craufurd-rise. Dep. £2.

Manchester City C.—Construction of roads and sewers on the Bowlea neighbourhood, Rhodes-green area (contract 3). City S., Room 208, Town Hall. Dep. £2 2s.

Rochford R.D.C.—Construction of soil sewer at Folly-la., Hockley. E. & S., Council Offices. Dep. £2 2s.

JUNE 28.

Chichester R.D.C.—Construction of sewage scheme in the parish of Boxgrove. Lawson, E. & S., East Pallant-hse. Dep. £3 3s.

Littleborough U.D.C.—Surface dressing of various roads. E. & S., Council Offices. Dep. £1.

Sale B.C.—Advanced preparation of roads and sewers on Gratrix-la. estate. No. 1 development. Boro' E., Town Hall. Dep. £2 2s.

JUNE 30.

Bridgwater B.C.—Construction of about 3,000 yds. of spun-iron pumping main, together with appurtenant works. John Taylor & Sons, Artillery-hse., Artillery-row, Westminster, S.W.1. Dep. £5.

Lowestoft B.C.—Construction of roads and sewers, extension "D," at Whitton estate. Boro' E., 49, High-st. Dep. £2 2s.

Norwich City C.—Construction of surface water outfall sewer to drain Heartsease-la. housing estate (contract 2). City E., City Hall. Dep. £2 2s.

Ruthin R.C.—Construction of roads and services for 82 houses at Haulfryn estate. T.C., Town Hall. Dep. £3 3s.

JULY 5.

Aberdare U.D.C.—Advance site preparation works at the Llettyshenkin housing site, Cwmbach. E. & S., Vestry Hall, Aberdare. Dep. £2 2s.

New Mills U.D.C.—Construction of water main at Brookbottom Water. Brady & Partington, engineers, Market-st., Chapel-en-le-Frith. Dep. £2.

†Penzance B.C.—Construction of r.c. water storage tank and building to house plant at Boscathnoe reservoirs. Boro' E., Municipal-bldgs.

Twickenham B.C.—Reconstruction of Stanley-rd., Teddington. B.E., Municipal Offices. Dep. £2.

JULY 7.

Warminster U.D.C.—Construction of estate road with footpaths, sewers and incidental works in connection with the erection of 100 houses at Alcock Crest. S., 36, Market-pl., Warminster, Wilts. Dep. £2.

JULY 8.

Aled R.D.C.—Bylchau and district water supply scheme. Sandford Fawcett & Partners, consultant engineers, 53, Victoria-st., S.W.1. Dep. £5 5s.

JULY 10.

Stourbridge B.C.—Construction of roads and sewers and incidental works on the Pedmore Fields estate. B.E. & S., The Council House. Dep. £3 3s.

Thingoe and Thedwastre R.D.C.—Construction of spun-iron water mains, contract 8. Lemon & Blizard, engineers, 59, Tufton-st., Westminster, S.W.1. Dep. £5 5s.

"THE BUILDER" PRICES

ZINC DOWN

The Ministry of Materials announced that on June 4, 1952 the price of good ordinary brand zinc was decreased from £166 to £150 per ton delivered consumers' works. Premiums for higher grades remain unchanged.

In consequence of this reduction in the price of zinc, the Brass and Copper Tube Association announced that the basis price of brass tubes had been reduced by ½d. per lb. to 24d. per lb. and that the list prices of brass and aluminium brass condenser ferrules were also reduced by ½d. per lb.

The Chain Link Fencing Association stated that in consequence of a reduction in the price of refined and electrolytic zinc, the current chain link fencing premiums were reduced by 2½ points with effect from June 5.

A FURTHER ZINC REDUCTION

The Ministry of Materials has announced that as from June 6, the price of good ordinary brand zinc has been decreased from £150 to £138 per ton delivered consumer's works. Premiums for higher grade remain unchanged.

In consequence of the further reduction in the price of zinc announced on June 6, the Brass and Copper Tube Association state that the basis price of brass tubes has been reduced by ½d. per lb. to 23½d. per lb.

The list prices of brass and aluminium brass condenser ferrules have also been reduced by ½d. per lb.

The Chain Link Fencing Association announce that in view of the further reduction in the price of refined and electrolytic zinc, the current chain link fencing premiums have been reduced by 2½ points with effect from June 9.

JULY 12.

Abertillery District Water Board.—Llanover Colliery water scheme. W. Cory Goddard, M.Inst.C.E., Board's Engineer, Midland Bank-chbrs., Bridge-st., Newport, Mon. Dep. £26 5s.

GENERAL BUILDING WORK

(LONDON)

Barnet.—SCHOOL EXTENSION.—Wallis, Gilbert & Partners, FF.R.I.B.A., 5, Cromwell-rd., S.W.7, have prepared plans for the extension of St. Andrew's Church School, Totteridge. Tenders will be invited after submission of plans to M.O.E. for final approval.

Croydon.—WORKS EXTENSION.—Southern Foundaries (1926), Ltd., ironfounders, of Purley-way, Croydon, propose extensions to their works.

Ealing.—THEATRE PROJECT.—Planning consent has been obtained to the proposal to erect a community theatre on the site of the Questors Theatre. Work is not likely to begin for some considerable time. Mr. Ernest L. Ives, L.R.I.B.A., 4, The Grange, The Green, Southall, Middlesex, is expected to be appointed to prepare the scheme.

Paddington.—FLATS.—B.C. propose to erect 22 flats on the war-damaged sites at Nos. 114-120, Portnall-rd., and Nos. 280 to 284, Kilburn-la. The est. cost of buying and developing the site is £54,207. The plans have been prepared by the Boro' A.

St. John's Wood.—FLATS.—Louis de Soissons, A.R.A., & Partners, 3, Park-sq.-mews, N.W.1, are the architects for 111 flats on the Townshend estate.

St. Marylebone.—LIBRARY.—The Boro' E. has prepared plans for a branch library at Little Portland-st.

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(PROVINCIAL)

Atherton.—U.D.C. approved layout for four blocks of flatted houses at Cross-st. and Derby-st. (architects, J. C. Prestwich & Sons, Bradshawgate-chbrs., Leigh.

Bowdon (Ches).—Manchester Reg. Hospital Brd. propose improvements to E.N.T. Theatre at St. Anne's Hospital, at £6,097. Architect to Brd., T. Duffy, Sunlight House, Quay-st., Manchester.

Burnley.—R.D.C. propose miners' houses at Blacko, Cliviger, Higham and Worsthorne and six aged persons' bungalows at Cliviger.

Caernarvon.—T.C. to negotiate contract for erection of further 12 houses.

Cheadle (Staffs).—Methodist Church, Longton Circuit, propose erection of new church at Weston Coyney estate.

Darlington.—J. W. Richardson & Sons, Ltd., builders, Quebec-st., Darlington, are to erect 14 houses in Kensington-gdns.

Darlington.—Architect for eight houses for N.E.R. Cottage Homes is A. Newton Thorpe, Architects' Dept., Civil Engineer's Office, British Railways, York.

Daventry.—T.C. negotiating for erection of further 12 houses.

Durham.—It is proposed to convert the old St. Mary's College for Women, Durham University, into a Choristers' School, at a cost of £10,000. A further £8,000 is to be spent repairing the North Transept of Durham Cathedral.

Eston.—A site of 286 sq. yd. at the junction of North Loop-rd. and Eston-rd. is to be used by Postmaster-General for proposed telephone exchange.—John Smith's Tadcaster Brewery Co., Ltd., High-st., Tadcaster, are to carry out alterations to the "Woodman's Arms," Normanby, and have prepared their own plans.—C. W. Bell, Ltd., Builder, 41, High-st., Eston, is to develop about 10 acres of land on the Crossbeck estate.

Garstang.—R.D.C. received immediate starting date for new conveniences at Garstang, Eccleston and Pilling.

Gateshead.—Gateshead & District Hospital Management Com. are considering proposed additions to Queen Elizabeth and Sheriff Hill Hospitals, at a cost of £250,000.

Halesowen.—T.C. approved plans for additions to Cradley C.E. sch.

Halifax.—T.C. received starting date (Aug. 1) for new bus stn. at Cross Field.

Hartlepool.—Boro' E. has prepared plans for eight houses near Throston sch.—T.C. is seeking loan sanction for £15,854 for 10 houses and four flats in Prissick-st.

Hyde.—T.C. approved plans for 11 houses off Ashton-rd. for Crompton Bros.

Lleyn.—R.D.C. propose eight houses at Penmorfa and considering houses at Caellwyd Llanystumdwy.

Meriden.—B.E.A. propose third power stn. at Hams Hall. Est. cost, £21,000,000.

Milnrow.—U.D.C. propose erection of further 30 houses.

Minehead.—Parks Estate (Minehead), Ltd., propose to erect 15 houses and five bungalows at Park-house-rd.—U.D.C. to build 15 bungalows and 24 flats at Alcombe to plans by the S.

Newcastle-on-Tyne.—C. S. Errington, 46, Grainger-st., Newcastle, is the architect for converting premises in Osborne-rd. into a children's home for D. B. Smith.—Plans have been approved for alterations to Benfield-rd. and Walkergate Hospital, for Newcastle Reg. Hospital Brd. (architects, L. J. Couves & Partners, Carliol House, Newcastle).—Marshall & Tweedy, 36, Blackett-st., Newcastle, are architects for canteen and warehouse in Welbeck-rd. and Gillies-st., for Cowper & Dodsworth, Ltd., manufacturing confectioners, Welbeck-rd.

Newcastle-on-Tyne.—City Council is to spend £12,275 on alterations to Ponteland Cottage Homes. City A., G. Kenyon, 18, Cloth-market, Newcastle.

Newcastle-on-Tyne.—10 police houses are planned by the City Council in Dunholme-rd. and Bentinck-rd. City A., G. Kenyon, 18, Cloth-market, Newcastle.

Newcastle-under-Lyme.—B.C. approved erection of infant welfare centre at Clayton-rd., for Staffs C.C. —B.C. approved plans for:—Body building shop at Talke for North Midlands Motors, Ltd.—Extensions

at Sutton-st., for Swettenhams, Ltd.—Club and institute, Bradwell-la., Porthill, for Bradwell Working Men's Club and Institute, Ltd.

Staffs University College to erect further 20 staff houses.

Northumberland.—Imperial Chemical Industries, Ltd., Billingham-on-Tees, have obtained sanction to build a factory and high explosives depot at High Callerton.

Northumberland.—C.C. is seeking permission to build additional school accommodation at Longbenton, following a decision by Newcastle City Council to build 4,000 flats in that area. Cty. A., C. C. Brown, County Hall, Newcastle.

Nuneaton.—B.C. to prepare draft layout for flats and community buildings at The Circle.

Oldham.—B.C. approved plans for offices, etc., at German Mill site, Derker-st., for M.R.Q. Construction Co., Ltd.—Extensions to works, Hardy-st., for Bardsley Jig & Tool Co., Ltd.—E.C. propose C.E. prim. sch. at Sholver-la., Moorside.

Oldham.—Governors of Henshaws sch. propose enlargement of premises.—Manchester Reg. Hospital Brd. approved conversion of Ward M2, into chest clinic at District General Hospital, at £5,707.

Otley.—U.D.C. to lease sites at Milner Bank for erection of 48 houses.

Rochdale.—Licensing Justices approved alterations to the "Beach Hotel," Hollingworth-la.

Runcorn.—U.D.C. approved layout for 169 houses, garages, and block of three-storey flats at Town Hall estate (section 3).—U.D.C. approved plans for extensions to laboratory and two amenity buildings at Rocksavage Works, for I.C.I., Ltd. (General Chemicals Div.).

Seisdon.—R.D.C. preparing plans for erection of further 336 houses.

South Shields.—Ravanseft Properties, Ltd., London, are seeking permission to begin work on the erection of shops (architects, L. H. Fewster & Partners, 22, Conduit-st., London, W.1).—Old people's hostels are proposed by T.C. in Stanhope-rd. and Beach-rd.—T.C. has approved plans by Newcastle Reg. Hospital Brd., "Dunira," Osborne-rd., Newcastle-on-Tyne, for a nurses' training sch. at South Shields General Hospital.

Spennymoor (Co. Durham).—U.D.C. has approved plans by its architect for 550 houses on Middlestone Moor estate.—Council has received loan sanction for £67,270 for 50 houses to be erected at Kirk Merrington.

Stockport.—Improvements proposed to A.1 children's ward at Stepping Hill Hospital.

Urmston.—Manchester Reg. Hospital Brd. propose extensions at Park Hospital for group pathology dept., at £56,235. Architect to Brd., T. Duffy, Sunlight House, Quay-st., Manchester.

West Riding.—C.C. received approval for revised 1952/3 schools programme as follows:—Grimthorpe sec. (£135,000); Dalton inf. (£38,550); Darton Kexborough inf. (£33,082); Maltby gram. extensions (£30,000); Worsborough Dale sec., 2nd instalment (£75,000); Stocksbridge inf. (£31,000); Percy Jackson gram., Adwick-le-Street, extensions (£40,000); completion of Ecclesfield Yew-la. sec. (£115,000); Darton sec. (£95,000).

Wharfedale.—Joint Crematorium Com. propose conversion of Mitchell Memorial Home at Rawdon as a crematorium.

Whitehaven.—Solway Chemicals, Ltd., a subsidiary firm of Marchon Products, Ltd., Whitehaven, are making a start on the preliminary work for a plant for the making of sulphuric acid and cement.

TENDERS

* Denotes *accepted.*

† Denotes *provisionally accepted.*

‡ Denotes *recommended for acceptance.*

§ Denotes *accepted subject to modification.*

¶ Denotes *accepted by H.M. Government Departments.*

Aberdare.—Construction of nine shops, six flats and public conveniences at Penywaun, for U.D.C. E. & S., Vestry Hall, Aberdare: *Gee, Walker & Slater, Ltd., Coychurch-rd., Bridgend, Glam., £25,506 (subject to approval of the Welsh Office, Ministry of Housing and Local Government).

Aberdeen.—Plans prepared for the reconstruction with additions to the King-st. public prim. sch. Allan, Ross & Allan (F. & A.), architects, 10, Bon Accord-sq., Aberdeen: Concrete, drainage, brick, building and allied works, *Adam Birnie, Claremont, Aberdeen; joinery, carpentry and allied works, *Frank G. Donald, Aberdeen; plumbing, sanitary and heating engineering and allied works, *J. F. Edmond, Ltd., Aberdeen; painting, decorating, glazing and allied works, *James Chapman, Aberdeen; steel windows and casements, *Mellows & Co., Ltd., Glasgow.

Alsager.—Six houses at Audley-rd., for U.D.C.: *W. Moore, Alsager, £7,724.

Cheadle.—Four houses at Ipstones and 18 at Weston Coyney, for R.D.C.: *J. A. Bailey, Tape-st., Cheadle, £5,659 and £26,857.

Doncaster.—Erection of Hawthorne (Cantley) prim. sch., for E.C.: *Direct Labour, £53,105.

Driffield (Yorks).—Four bungalows at Kilham, two at Hutton Cranswick and two houses at Tibthorne, for R.D.C.: *D. L. Naylor, Middle-st. North, £3,492, £1,910 and £3,099.

Dumbarton.—Erection of 40 houses for corporation. William Wilson, architect, Municipal-chbrs., Dumbarton: *The Weir Housing Corporation, Ltd., Coatbridge.

Earlsfield.—Erection of St. Gregory's Presbytery, Garratt-la., Earlsfield, S.W.18. L. H. Shattock, F.R.I.B.A., A., 4, Crescent-rd., Wimbledon, S.W.20: *Bailey, Ltd., 2, George-rd., New Malden, Surrey.

Eston.—Erection of 22 houses on the Crossbeck estate, for U.D.C.: *C. W. Bell, 41, High-st., Eston.

Eston.—Erection of 10 houses on the Redcar-rd. East housing estate, for U.D.C.: *A. Payne, Gordon-rd., Redcar, £15,166 (revised tender).

Eston.—Erection of four shops and flats at Eston, for U.D.C. Surveyor, N. C. Harrison, Normanby-rd., South Bank-on-Tees: *Nicholson & Herd, Eston, £12,103.

Farnworth.—Houses at Plodder-la. site, for U.D.C.: *E. F. Davis, Ltd., Bank-st., Farnworth (50); *E. S. Street, Ltd., Bolton-rd., Kearsley (50); *W. Lionel Gray (1933), Ltd., Hospital-rd., Farnworth (50).

Heston and Isleworth.—Erection of 16 houses at the junction of Vicarage Farm-rd. and Cranford-la., Heston, for B.C.: *Building & Public Works Construction Co., Ltd., Green-la., Hounslow, £26,228.

Hyde.—Further eight houses at Harbour Farm estate, for B.C.: *Vessey Bros., Ltd., Marple, £12,142 (ext. to contract).

Lanarkshire.—Erection of 15 houses at the Anniesland-rd. area, Great Western-rd. Norman MacFadzen (F.), architect, 137, West Regent-st., Glasgow: *John Lawrence (Glasgow), Ltd., Glasgow.

Lanarkshire.—New charging house, petrol tank and other additions at the George VI Dock for the Renfrew Stevedoring Co., Ltd.: *Hugh Leggatt, Ltd., Barrhead, Renfrewshire.

Lanarkshire.—Erection of 22 houses at Riddrie Knowes and Riddrie-cres. Norman MacFadzen (F.), architect, 137, West Regent-st., Glasgow: *John Lawrence (Glasgow), Ltd., Glasgow.

Leek.—Four houses at Ilam, for R.D.C.: *G. Minshull & Co., Waterloo-rd., Cobridge, Stoke-on-Trent, £6,413.

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Lleyn.—Six houses at Llanbedrog, for R.D.C.: *G. I. Hughes, Nevin, £9,018.

¶London (Admiralty).—Particulars of contracts placed by Civil Engineer-in-Chief's Dept., Admiralty:—

Anthorn: 22 officers' houses, including site works, John Laing & Son, Ltd., Carlisle.

¶London (Air Ministry).—List of new works contracts to the value of £500 or over for the fortnight ended June 7.

Runway work: W. and C. French, Ltd., Buckhurst Hill, Essex; The Motherwell Bridge Contracting and Trading Co., Ltd., London, S.W.1. *Re-surfacing work*: The General Asphalte Co., Ltd., London, S.W.1; Roads Reconstruction (1934), Ltd., Frome, Somerset. *Building work*: Joan Knox (Bristol), Ltd., Bristol, 3; Francis Jackson Contractors, Ltd., Ickenham, Middx.

General maintenance work: G. and J. Seddon, Ltd., Walkden, Manchester; Pearson and Fraser, Lerwick, Shetland; Dudley Coles, Hartley, Plymouth; J. Gerrard & Sons, Ltd., Swinton, Manchester; F. & D. Lucas, Salisbury. *Heating services*: Benham & Sons, Ltd., London, W.1; G. N. Haden & Sons, Ltd., London, W.C.2.

London (M.O.W.).—Contracts placed by M.O.W. for week ended May 31:—

Lincolnshire: Erection of T.R.S., Bass Garth, Ashton & Son, Barton-on-Humber. *Yorkshire*: Erection of T.R.S., Giggleswick, T. Croft & Sons, Ltd., Holme Slack Works, Blackpool-rd., Preston.

¶London (War Dept.).—Works contracts placed by W.D. during week ended May 30:—

Somerset: Building work, Roberts Bros. (Contractors), Ltd., Bridgwater. *Hampshire*: Miscellaneous, Cooper & Rowe (Contractors), Ltd., Bournemouth. *Bucks*: Painting and decorating, N. S. Long, Ltd., Poulton-Le-Fylde. *Yorkshire*: Painting and decorating, Arundel (Contractors), Ltd., Bradford; Painting and decorating, Oates Bros., Shipley; Road work, D. Wood & Co., Ltd., Yeadon.

Nottinghamshire: Building work, W. J. Sims, Sons & Cooke, Ltd., Nottingham. *Kent*: Building work, Wm. Sharratt, Ltd., Wolverhampton. *Salop*: Miscellaneous, Bertram E. Pugh & Sons, Shrewsbury. *Co. Down*: Miscellaneous, James McMullan & Co., Ltd., Lisburn.

Longbenton.—Houses for U.D.C. 32 at Avondale-ave., Forest Hall: *G. Bainbridge, Newcastle, £43,632. 128 at Burradon: *G. Wimpey & Co., Ltd., £164,160.

Macduff.—Erection of 40 houses for corporation. A. C. Miller, architect, Municipal-chbrs., Macduff: *The Weir Housing Corporation, Ltd., Coatbridge.

Moray and Nairn.—Erection of 20 houses at Elgin for C.C. John Findlay (L.), County Architect, County-chbrs., Elgin: *The Weir Housing Corporation, Ltd., Coatbridge.

Morpeth.—Erection of 28 houses at Lynemouth, for R.D.C. Plans by the S., Dacre-st., Morpeth: *Graham & Mansworth, 454, Denton-rd., Newcastle-on-Tyne.

Newcastle.—Alterations into a cubicle section at Walkergate Hospital. Plans by L. J. Couves & Partners, Carliol-hse., Newcastle: *T. Clements & Sons, Selborne-gdns., Newcastle-on-Tyne.

Newcastle-on-Tyne.—Erection of 32 houses in Redesmouth-pl. and 52 flats at Silver Lonnen. Architects, Dryden & Shaw, 6, Market-st., Newcastle: *R. Bowey & Son, Back Raby-st., Newcastle.

Oldham.—Further 104 "No Fines" houses at Fitton Hill estate, for B.C.: *Geo. Wimpey & Co., Ltd., London, £130,400.

Rochdale.—35 houses and 19 blocks of flats, comprising 111 dwellings, Kirkholt estate, for C.B. W. H. G. Mercer, A.M.I.C.E., B.S.: *James Hobson & Sons, Ltd., Newark-st. works, Nottingham.

Salford.—36 flats at Devonshire-rd. site, for T.C.: *C. Musker Bros., Ltd., Swinton, nr. Manchester, £49,748.

Scarborough.—Erection of eight flats and 10 semi-detached houses in the Westwood estate: *A. Moore & Son, Springhill-rd., Scarborough.

Seisdon.—16 houses at Jenks-ave., White Hill, for R.D.C.: *W. Basterfield, Ltd., £28,663.

Sunderland.—Erection of assembly shop in Peacock-st. West, for the Sunderland Pattern and Woodworking Co., Ltd.: *Direct Labour.

Tutbury.—Eight houses at Beacon-rd., Rolleston, for R.D.C.: *Cliff & Archer, Ltd., 163, Rolleston-rd., Burton-on-Trent, £10,978.

Urmston.—36 houses at Nursery-rd., Davyhulme, for U.D.C.: *Humphrey Park Estates, Ltd., Humphrey-la., Urmston, £41,779.

Wallasey.—Phase 1 of Leasowe sec. mod. sch., for E.C.: *Boultons (Bebington), Ltd., School-la., Higher Bebington, Cheshire.

Weardale.—Erection of 22 houses for R.D.C. J. Lawton, A., Council Offices Stanhope: *R. Gallacher, Ltd., Blackhill (14); *William Stobart, Billy Hill, Crook (six); and *Direct Labour (two).

Worthing.—Erection of 52 houses in Blacksmith Field, Sompting, for R.D.C.: *Beamish (Builders), Ltd., £72,323.

York.—70 flats at Askham-la. and Moor-la. estates, for T.C. E. Firth, A.R.I.B.A., A.M.T.P.I., City A.: *F. Shepherd & Son, Ltd., Blue Bridge-la., York, £98,290.

Codes of Practice

The Council for Codes of Practice for Building has recently issued the following Codes: C.P. 327.300, "Sound Distribution Systems," price 6s.; C.P. 327.401, "Bell and Call Systems," price 3s.; C.P. 327.403, "Impulse Clock and Timing Systems," price 3s. Copies of these Codes are obtainable from the B.S.I., 24, Victoria-street, S.W.1.

Building Plant Exhibition

At the Ministry of Works Building Plant Exhibition now being held at Preston, Lancs, Kwikform, Ltd., of 194, Waterloo-road, Birmingham, 25, are showing a range of their building and civil engineering equipment. This includes their two-component suspended formwork, their wall formwork and the Kwikform flexible formwork. Other exhibits are their unit-frame scaffolding system and range of trestles, together with the standard Kwikform trench shores. An exhibit that provides for the quick transportation of materials on site is the G.F. Light Dumper.

Translucent Concrete

An article by Mr. H. Wingrave Newell, M.I.Struct.E., on "Translucent Concrete" (reinforced concrete slabs, grids and arches in which glass lenses are incorporated to form a monolithic structure) has been published in booklet form by Lenscrete, Ltd., Queen's Circus, S.W.8. The article, which has been extracted from the "News and Reviews of the Society of Glass Technology," deals with the type of construction in which glass lenses, concrete and steel are incorporated to form a single structure in a manner such that the three materials are used to resist strain.

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The perpendicular cliffs of Salisbury Crags rise above the Old Town of the capital. This "Royal Mile," leading from the Castle to the Palace, was once very fashionable but has now deteriorated to slums. Plans for restoring it to useful life are referred to in this issue.

EDINBURGH

THE opening in Edinburgh next week of the British Architects' Conference will see a temporary reversal of the trek to the South ascribed by tradition to the Scots (by tradition only, since there are more Englishmen permanently living in Scotland today than Scots in England). It is nearly 30 years since the Conference last met in Edinburgh—too long for the taste of many, both Scots and English, who love this great city called by Froissart the Paris of Scotland, by others the Athens of the North, but by its own sons Auld Reekie.

Seen for the first or fortieth time, Edinburgh has the same enchantment; its visual beauty and medieval history combine to enslave anyone possessing the least grain of sentient feeling. A city of curious contradictions, austere yet friendly, with architecture varying from the small scale suited to a medieval walled town to the monumental of a more liberal age, with planning that ranges from the mysterious congeries of wynds and pends of the crowded Old Town to the spacious layout of James Craig's New Town: such is Edinburgh. Above stands the Castle, eternally on guard, and over all in summer a gold, Augustan haze. Here is a last outpost of medievalism whose character is only heightened by the contrast with the frequent evidences of modernity.

Such is the home of this year's Conference, a home further to be graced by the presence in Holyrood House during the period of the Queen and the Duke of Edinburgh. A record attendance of architects and their wives is expected for this annual meeting, a meeting which affords perhaps the one chance in the year for architects to feel themselves as part of a great and undivided profession. Two papers which should be stimulating and of high interest have been commissioned (and we shall hope they will be better attended than some in recent years; if not, then consideration should be given to the propriety of arranging whole-day tours in competition), and a full and stimulating social programme has been prepared by the Edinburgh hosts suitable to an occasion which will be unique in being the first Conference to take place in Scotland under a Scottish President.

But whatever stars and luminaries may shine at the Conference, Edinburgh itself need not fear. As an architect son, the late Thomas P. Marwick, told the Conference of 1923:

"If you come to it as a stranger in a mood of peace and restfulness you may say, 'This is a Dream City.' You will not deny that it is redolent of charm and beauty; a city of castle, sea and distant mountains; a royal and incomparable city, one of the most grand and glorious in the world; a city full charged with the pathos and tragedy of the past, a city one could live and die for; a city set on a hill which cannot be hid; a city which comes whispering her enchantment to all who love her, a city

> 'Piled deep and massy, close and high,
> Mine own romantic town!'."

Thirty years on the same strange enchantment holds true. That it may play a part in uplifting and inspiring our own age must be the wish of all who travel North next week.

ASTRAY IN EDINBURGH

What the City Has to Offer Away From the Beaten Track

By ROBERT HURD, BA, FRIAS

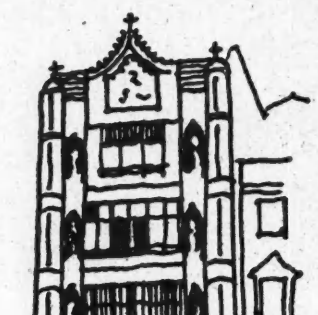
ARCHITECTURAL visitors to Edinburgh will have certain key features already in mind when they arrive in the Scottish capital. The medieval Old Town on its ridge stretching down the length of the Royal Mile from the Castle to the Palace of Holyroodhouse, fretted by wynds and closes, and punctuated midway by the crown steeple of St. Giles'; the valley of Princes-street gardens and the stygian trough of British Railways and, beyond, the Georgian New Town with its austere but spacious parallelograms, places, rows, squares, circuses, crescents and terraces; the variegated commercial architecture of Princes-street and George-street and the feminine stateliness of Charlotte-square, along with a few good or bad salient buildings such as Adam's Register House and University and the North British Station Hotel—all these will probably make up the preconceived picture of the city.

On such an occasion as the R.I.B.A. Conference there will be ample facilities for guiding visitors to the outstanding architecture of the city—guide books and articles, and buses in which to sit and read them while touring around. The purpose of this article is rather to lead visitors astray from the well-worn paths to see and savour things which they might otherwise miss: that, and to glance at things on the highways that are not usually noticed.

TWO VIEWPOINTS

To begin with, a general scrutiny from two viewpoints. The New Town cannot be savoured properly from Princes-street, but rather from the highest part of the Castle in front of St. Margaret's Chapel. Here indeed Craig's plan can be read in three dimensions, and the irresponsible architecture of Princes-street seen in all its variety. Since Craig's day the scale of buildings has changed so much that the key features of his design do not stand out so much as they should, but, seen from this height, the architectural eruptions, which seem to shatter its harmony at street level, do not obtrude so aggressively. Even so, one should be able to pinpoint at least three Princes-street buildings for further acquaintance: the massive and forbiddingly gloomy New Club; Boots with its atmosphere of medieval romance, created by gothic niches for Scottish heroes; and the dress shop of Romanes and Paterson whose dainty little Victorian frontage is pure Drawing Room.

Thus and thus and thus have we broken down the over-prim elevations of Craig's streets—and even more, for are there not in George-street the figures of Pitt and Dr. Chalmers on pedestals in the curious company of George IV who (as the late Lord Rosebery noticed) is going for a brisk walk with his sceptre at the busy crossing of George-street and Hanover-street? Indeed we are apt to become altogether too indignant about the ruthless individualism of modern New Town architecture; that photographic panorama of modern Princes-street, hanging in Huntly House museum, can so easily provoke an architect to commit an excess. Rather should we treat them all as subjects for quiet laughter, or at most, as elements of a lightly ironic farce. Here and there, though, let us enjoy moments of positive pleasure by gazing at the modest perfection—miraculously preserved—of the George-street shopfront of T. and T. Clark, Theological Publishers, or of Blackwoods (of magazine fame) opposite.



"Medieval Romance"

Commercial Humour in George St

Wandering even further astray, the visitor should enter three licensed restaurants in the New Town, and not only for sustenance. First, in order to savour two vintages of Basil Spence: 1938-39, "L'Aperitif" (Frederick-street) and 1952 the private dining-room of "The Albyn" (Queen-street) are recommended; the former is now quite mellow, but the latter is a little heady. Second, in order to catch a glimpse of early Edwardian, visit the "Café Royal," with its astonishing ceramics and stained glass: such features should surely be listed for preservation as firmly as any castle.

"... pure Drawing Room..."

PALACE AND SLUMS

The second viewpoint from which the visitor's general scrutiny should be taken is more strenuously achieved. Breaking away from over-indulgence in the early Stuarts and as a relief after the classic dignity of Sir William Bruce at Holyrood-house, the visitor should leave the Palace forecourt for the Queen's Park and, noticing the charming little Victorian cast-iron lamps topped by crowns, strike out boldly up the Radical-road that skirts Salisbury Crags. It is a rough track and steeper than one would think: but the view from the higher level is rewarding. Here indeed is the problem of the Old Town laid out for inspection. In the foreground, two gasometers and an immense brewery gradually merging into potentially fascinating historic buildings that have become slums, and from these into plain, unadulterated, sinister-looking slums rising steeply from the green slopes of the Queen's Park. As the slums mount the slope they in turn merge into the University quarter linking up with the more patrician parts of the Old Town containing St. Giles', the City Chambers, the Law Courts and the major Libraries. Altogether an unforgettable view, usually enhanced by a drifting reek that lends a special perspective to the scene.

Of the well-known buildings mentioned, nothing need be said here; but as one's eye penetrates the reek there is much to take in. Architecturally the brewery itself has in recent years paid rather heavy-handed industrial courtesy to the Palace, no doubt at considerable cost. Massive stone archways through which vans pass a trifle self-consciously (overlooked by turreted battlements) cannot, however, banish the smell from the Palace precincts or the soot from its lovely gardens, nor do they silence the adjoining cooperage. Higher up there is a lum (*anglicé* chimney) with a more emphatic column of smoke than most: this is the outward and visible sign of the "steamie" or city wash-house where the inhabitants of the Royal Mile remove the dirt from their bed-linen and small clothes.